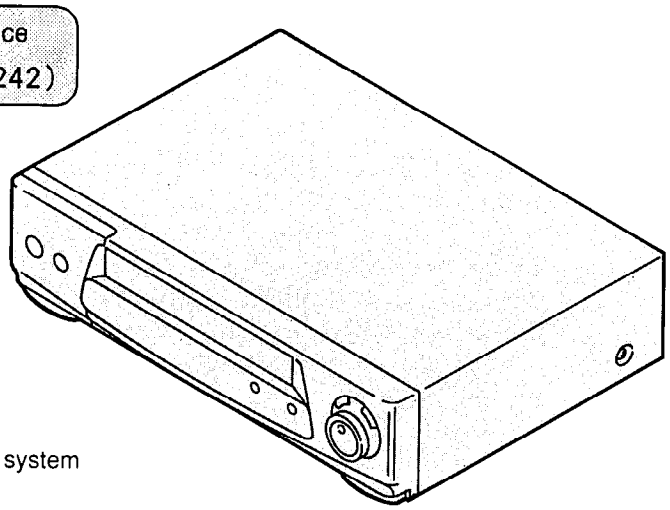
ORDER NO. VSD9609M201
D1

Service Manual

Operating Instructions
Disassembly Procedures
Maintenance
Block Diagrams
Schematic Diagram & Circuit Board Diagrams
Exploded Views & Replacement Parts List

VHS Hi-Fi
Video Cassette Recorder
AG-2550P
K-MECHANISM

Please use this service manual together with the service manual for K-MECHANISM (Order No. VSD9401M242)



Specifications

AG-2550P

Power Source:	120 V AC 50/60 Hz		
Power Consumption:	22 watts		
Video Recording System:	2 rotary heads, helical scanning system		
Video Heads:	4 heads		
Tape Speed:	SP; 33.3 mm/sec. EP; 11.1 mm/sec.		
Tape Format:	VHS tape		
Record/Playback Time:	120 min. with NV-T120 (SP)		
VIDEO			
Television System:	EIA; Standard (525 lines, 60 fields) NTSC color signal		
Modulation System:	Luminance; FM azimuth recording Color signal; converted subcarrier phase shift recording		
Input Level:	VIDEO IN (PHONO);	1.0 Vp-p,	75 ohm, terminated
Output Level:	VIDEO OUT (PHONO);	1.0 Vp-p,	75 ohm, terminated
	RF Modulated;	VHF channel US3 or 4,	75 ohm
AUDIO			
Input Level:	AUDIO IN (PHONO);	316 mV,	47 kohm
Output Level:	AUDIO OUT (PHONO);	400 mV,	1 kohm
Audio Track:	1 track (Normal-mono only), 2 channels (Hi-Fi audio track)		
Signal-to-Noise Ratio:	Video; more than 43 dB (SP)		
Dynamic Range:	Audio; more than 90 dB (Hi-Fi audio track)		
Audio Frequency Response:	20 Hz–20 kHz		
Wow and Flutter:	0.005% Wrms/Hi-Fi		
Operating Temperature:	5°C–40°C		
Operating Humidity:	35%–80%		
Weight:	9¼ lbs. (4.2 kg)		
Dimensions:	16 15/16" (W)×3 15/16" (H)×11¾" (D) [430 (W)×99.9 (H)×298 (D) mm]		

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

INTRODUCTION

This Service Manual contains the technical information which service personnel to understand and service the Panasonic VHS Video Cassette Recorder model AG-2550P.

Please use this service manual together with the Service Manual for mechanical adjustment and maintenance procedures of K-Mechanism (Order No. VSD9401M242).

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SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohm meter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 MΩ and 5.2MΩ .
   When the exposed metal dose not have a return path to the chassis, the reading must be ∞ .

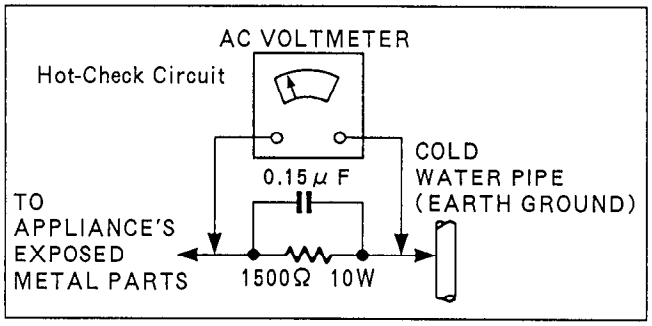


Figure 1

LEAKAGE CURRENT HOT CHECK (See Figure 1)

1. Plug the AC cord directly into the AC outlet.
   Do not use an isolation transformer for this check.
2. Connect a 1.5KΩ , 10W resistor, in parallel with 0.15μ F capacitor, between each exposed metallic part on the set an a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground.
   Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless mother such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

X-RADIATION

WARNING

1. The potential source of X-Radiation in EVF sets is the High Voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that jig is capable of handling 10kV without causing X-Radiation.

NOTE: It is important to use an accurate periodically calibrated high voltage meter.

3. Measure the High Voltage. The meter (electric type) reading should indicate 2.5kV, ± 0.15kV. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure. To prevent an X-Radiation possibility, it is essential to use the specified picture tube.

SECTION 1
GENERAL DESCRIPTIONS

1-1. SERVICE INFORMATION

<A> CHECKING OF MAIN C.B.A.

When servicing the MAIN C.B.A., take out the MAIN C.B.A. and mechanism from the frame and turn over.

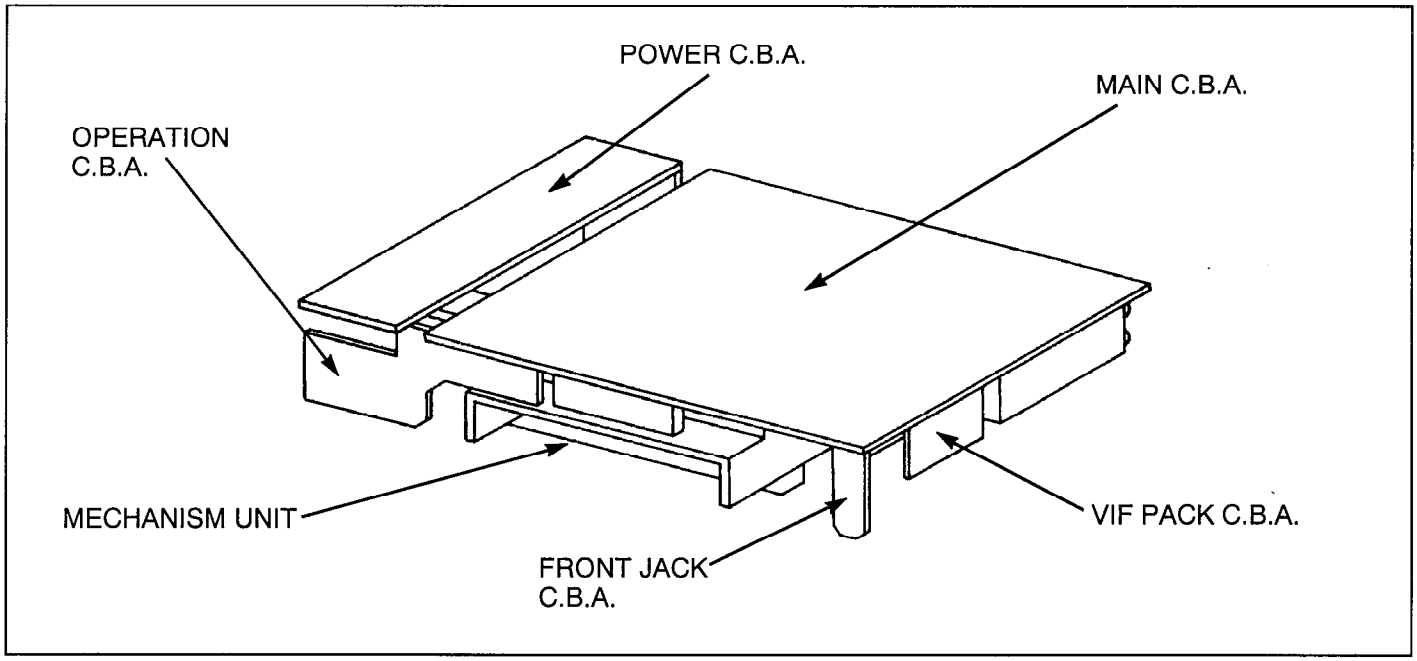


Fig.S1

<B> MECHANISM SERVICE POSITION

When servicing the K-Mechanism, take out the mechanism from the MAIN C.B.A. and connect Extension Cable (VFK0889) between the Loading motor connector and P1502 as shown in Fig.S2.
In this position , the following services are possible.

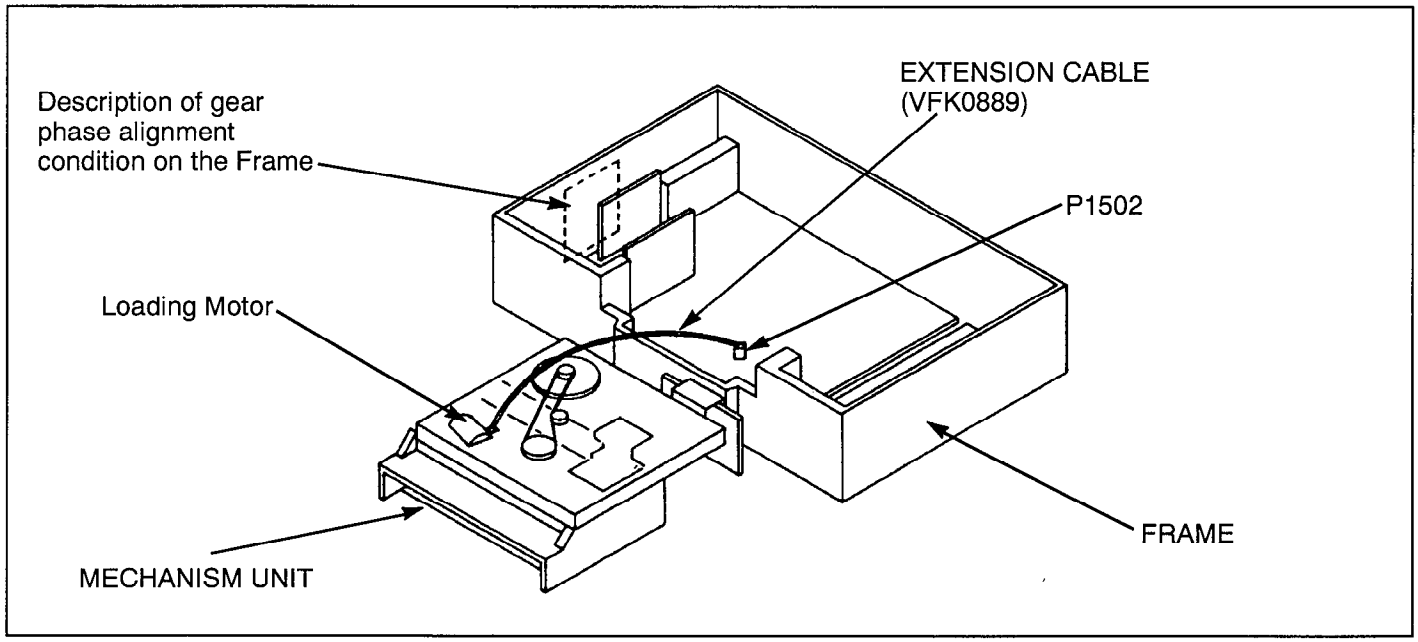


Fig.S2

<B-1> CHECKING OF GEAR PHASE ALIGNMENT CONDITION

Check gear phase Alignment Condition of Mechanism described on the left side of frame.

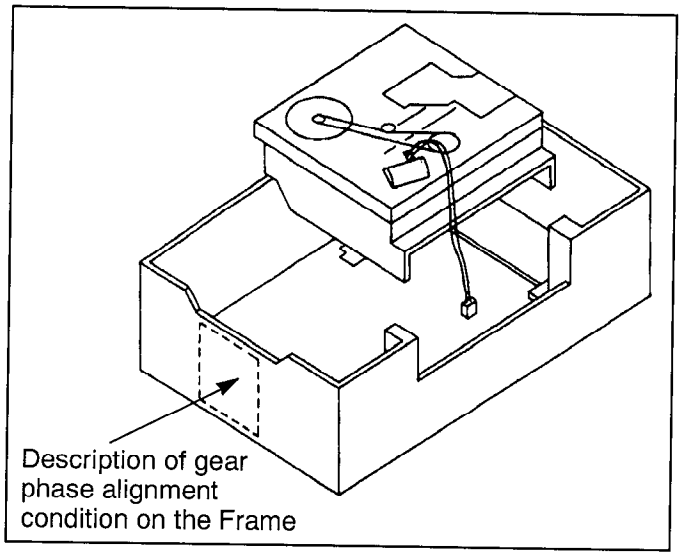


Fig. S3

<B-2> CHECKING OF LOADING/UNLOADING OPERATION

There are 3 methods for checking of loading/ unloading operation as follows.

(1) HAND OPERATION

1) Turn the Worm Gear or the Worm Wheel Gear (Remove the Loading Motor unit) manually.

(2) BATTERY OPERATION

1) Disconnect the Extension cable (VFK0889) from connection of loading motor unit.
2) Connect the Battery (Manganese-Type R6(AA) 3pcs. /+4.5V) to the Loading motor terminals.

(3) SERVICE INFORMATION DISPLAY OPERATION

1) Set the Service Information display mode. (Press the FF and EJECT buttons simultaneously.)
2) Press the FF and EJECT buttons 7 times to set the Service Mode 7.
3) In the above Service Information Display mode, the Loading Motor rotates for loading operation when the "PLAY" button is pressed. The Loading Motor rotates for unloading operation when the "STOP" button is pressed.

Remark:

Use the "SERVICE INFORMATION DISPLAY" mode for a final check of Mechanism movement.

<B-3> CHECKING OF REEL GEARS OPERATION

1) Move the mechanism to "PLAY" position by loading operation (Refer to < B >).
2) Turn the "Rotor Unit" to check the movement of reel gears.

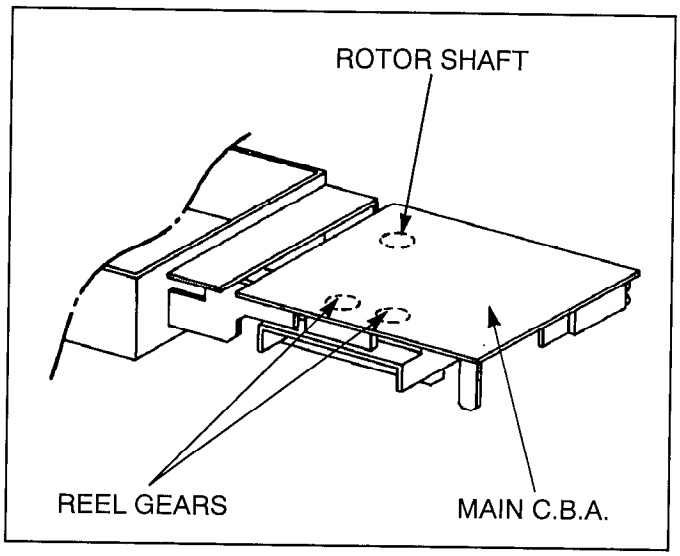


Fig.S4

<C> NEW GLDD CYLINDER UNIT REPLACEMENT

1) Remove Screw (A) for fixing the EARTH PLATE.
2) Remove the EARTH PLATE.
3) Remove 3 Screws (B) of the NEW GLDD CYLINDER unit with a magnetized screw driver.
4) Lift the NEW GLDD CYLINDER UNIT.

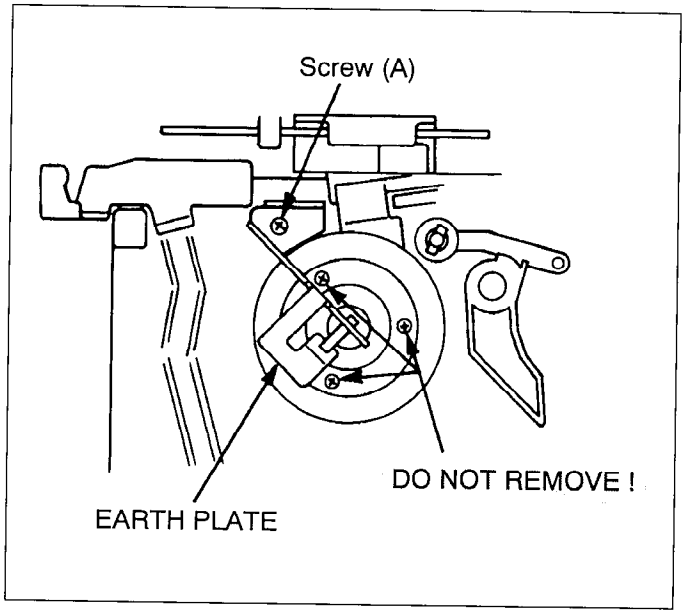


Fig. S5-1

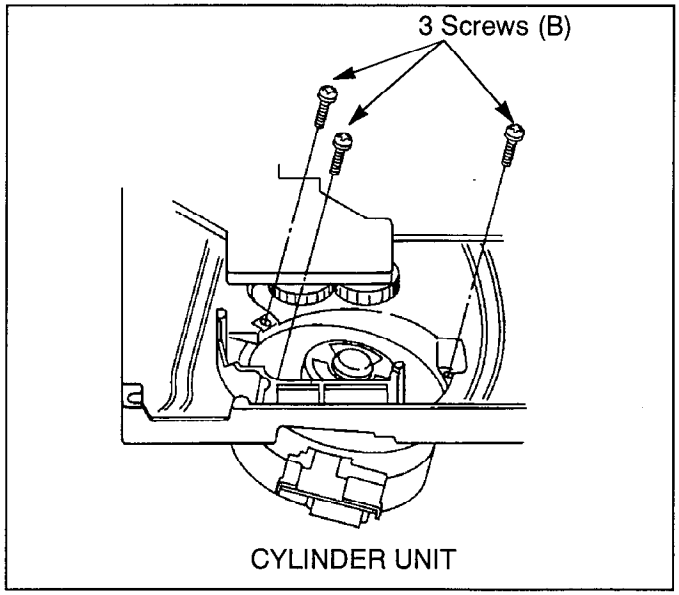


Fig. S5-2

<D> UPPER CYLINDER REPLACEMENT

<D-1>UPPER CYLINDER DISASSEMBLY

1) Remove Screw (A) for fixing the EARTH PLATE.
2) Remove the EARTH PLATE.
3) Lift the UPPER CYLINDER UNIT.

NOTE : Do not remove 3 screws on the UPPER CYLINDER.

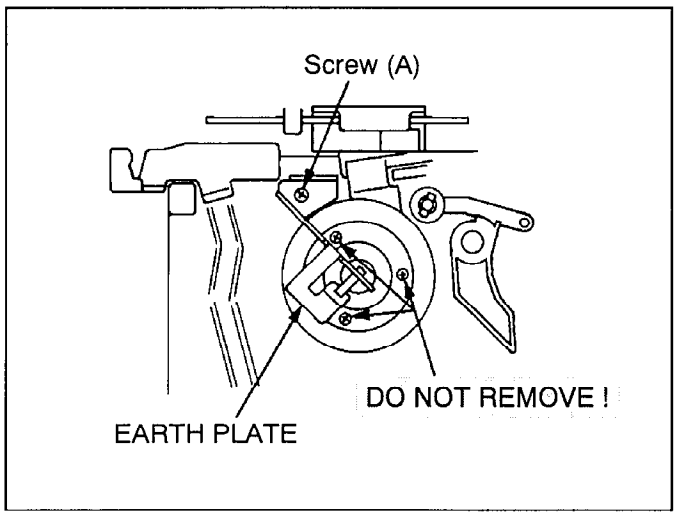


Fig. S6

Do not remove the ROTOR MAGNET which fixed by 3 screws on the UPPER CYLINDER.

If it is removed, refer to following method.

1) Install the ROTOR MAGNET so that the hole (B) on the ROTOR MAGNET fits to the small Projection (C) on bottom of the UPPER CYLINDER.
2) Tighten 3 screws on Top of the UPPER CYLINDER.

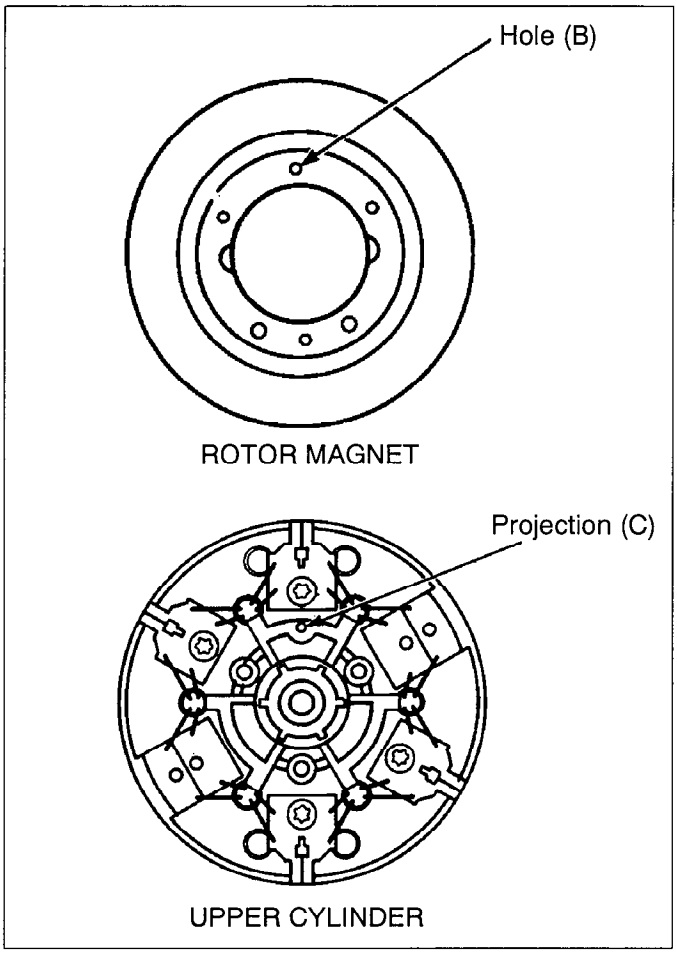


Fig. S7

<D-2> UPPER CYLINDER ASSEMBLY

When reassembling, Perform the steps in the reverse order of the DISASSEMBLY METHOD. (Item D-1)

<D-3> NEW GLDD CYLINDER

1) GLDD and NEW GLDD Cylinder
   The construction of New GLDD Cylinder has been designed simpler than GLDD Cylinder, and the general performance has been improved.
2) The difference between GLDD Cylinder and conventional cylinder.
   (1) GLDD has improved linearity, higher stability of herd revolution with oil sealing and higher serviceability with the simpler structure.
   GLDD and New GLDD Cylinders are used for step-up range VCR.
   (2) GLDD enables less working time to replace upper cylinder unit and cylinder unit due to the following reasons.
      1) No Soldeting
      2) No Screws
   Please refer to " Upper Cylinder Replacement" for the detailed replacement procedure.

Note: "GLDD" cylinder stands for the following.
G : GLDD has been developped and introducedfrom VCRs using G-Mechanism.
LDD : Liquid Direct Drive.

<E> CAPSTAN STATOR UNIT ASSEMBLY

When replacing the CAPSTAN STATOR UNIT, the STATOR CENTERING TOOL (VFK0851) must be used to center the CAPSTAN STATOR UNIT.

Method:
1) Place the CAPSTAN STATOR UNIT into position.
2) Loosely screw in the 3 Screws.
3) Insert the Stator Centering Tool (VFK0851) as show in Fig.S8.
4) Tighten the 3 Screws.
5) Remove the Stator Centering Tool.

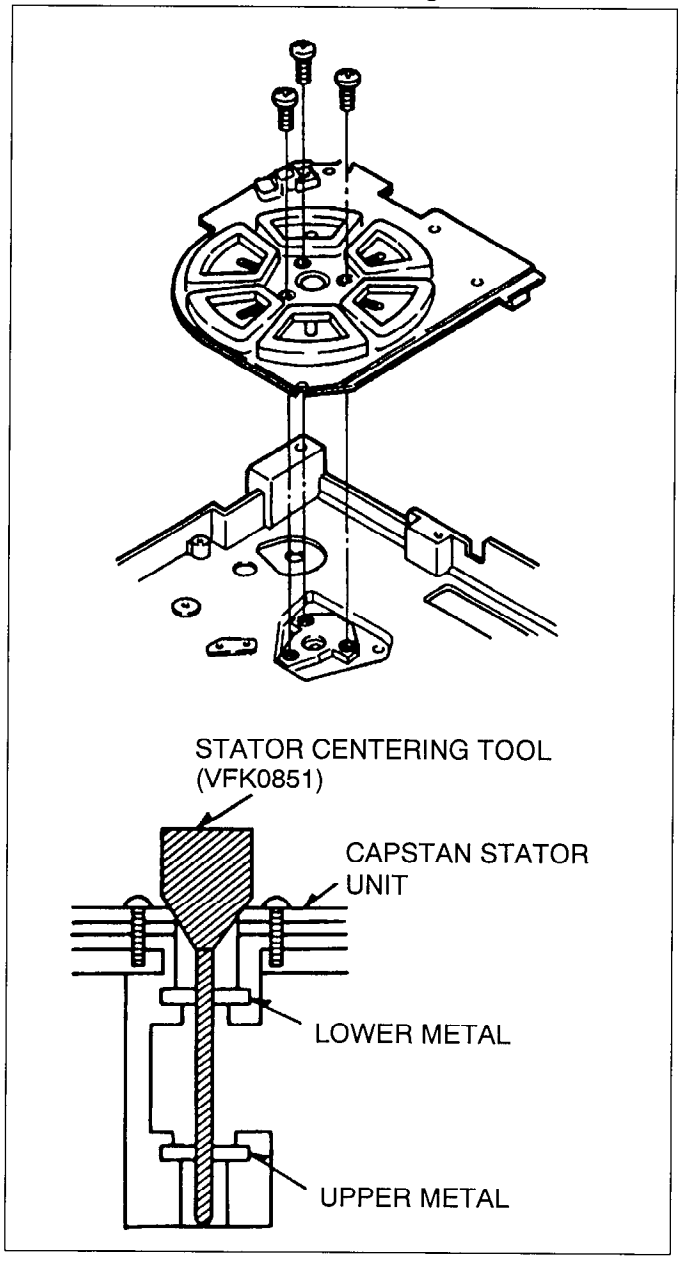


Fig. S8

<F> EJECT OPERATION

The main cam gear rotates in the direction of the arrow. The projection (B) of the carriage connection gear engages with the recession (A) of the main cam gear. The carriage connection gear rotates in the direction of the arrow to perform the Eject operation.

<NOTE>
If the Eject operation is performed without the cassette carriage installed while repairing or making the mechanical phase alignment, the main cam gear will not engage with the carriage connection gear and will not rotate.
To perform the Eject operation with the cassette carriage not installed, it is necessary to rotate the carriage connection gear by hand in the direction of the arrow.

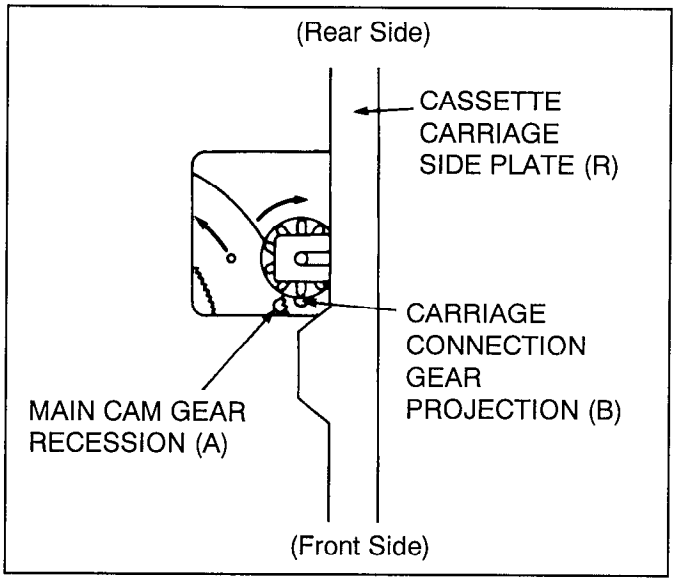


Fig. S9 Top View of Eject Operation

<G> TAKE-UP PHOTO SENSOR OPERATION

1) While servicing of the K-Mechanism, the unit will not operate properly if a strong light (ex, Fluorescent light) falls on the Take- up Photo Sensor.
In this case, cover the Take-up Photo sensor to prevent the light from falling on it.

2) While servicing of the K-mechanism with "Power On " and without cassette tape inserted, the Unit will not operate properly.

<H> POWER TRANSISTOR SERVICING

When removing the connector of the POWER Transistor, hold the Power Transistor by hand to prevent damage.

< I > CASSETTE TAPE REMOVAL

(1) HAND OPERATION

1) Take out the mechanism from MAIN C.B.A.
2) Turn the Worm Gear manually, moving the Loading post to the unloaded position.
3) Turn the Capstan Rotor Unit clockwise to Take up the Tape.
4) Turn the Worm Gear again to eject the cassette.

(2) BATTERY OPERATION

1) Connect the battery (Manganese-Type R6 (AA)3pcs./+4.5V) to P1502 as shown in Fig.S10.
2) After moving the LOADING POST to the unloaded position, disconnect the battery to stop the motor.
3) Turn the CAPSTAN to clockwise to take up the tape.
4) Reconnect the battery to eject the cassette.

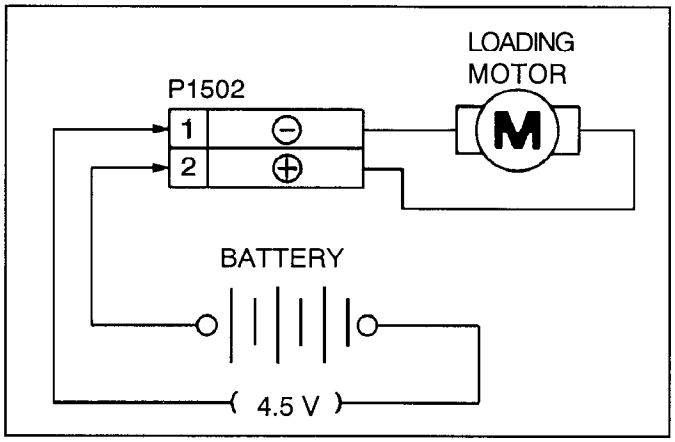


Fig. S10

If the cassette tape can not be removed by the above method, remove it by the following method.

1) Remove the Top Panel.
2) Remove the Front Panel Unit.
3) Lift up the Pinch Arm after removing spring.
4) Push the P5 Arm and remove the Tape from tape transportation (P3, P2, P5 and P1 Post).
5) Turn the Capstan Motor to take up the Tape.
6) Remove 1 screw from the Side Plate (R) Unit to disconnect the Rack Gear from the Carriage Connection Gear.
7) Take out the Cassette Tape from the Cassette Compartment.

<J> MODEL NUMBER SETTING OF TIMER MICROPROCESSOR

When replacing the Timer Microprocessor IC7501 (Part No. M37507V6AG), its IC should be set the initialization code.

Method :

PROCEDURES	DISPLAY
1. To set Service Mode 2, press the FF and EJECT buttons simultaneously three times.	
2. Press EJECT button for more than three seconds.	
3. Select adjustment number 2 by using CH ▲ (UP) / CH ▼ (DOWN) buttons.	
4. Press POWER button. Present setting code is indicated in the FIP DISPLAY.	
5. Set the initialization code 「03 34」 by using REW, PLAY,STOP and FF buttons.	
6. Press POWER button after setting the code.	
7. To release Service Mode 2, press the FF and EJECT buttons simultaneously six times.	

Fig. S11

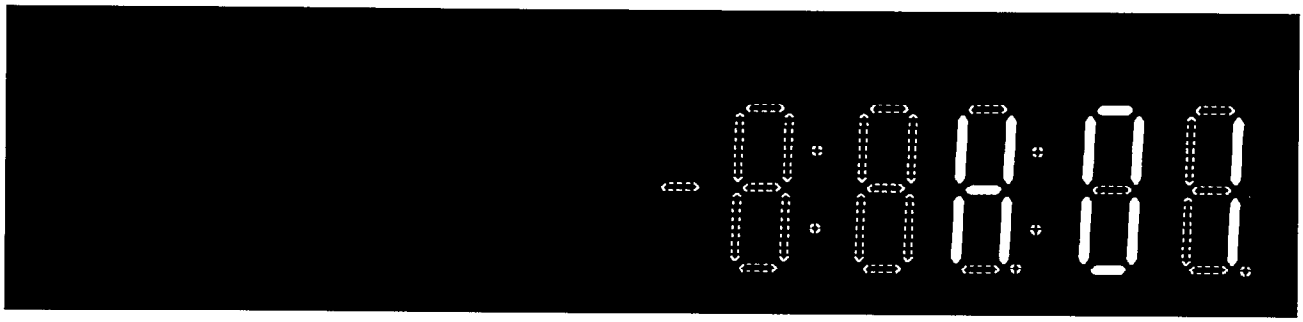
Note : 1. The VCR does not operate normally when the initialization code is not set correctly.
2. The function of Channel Memory IC have been built in the Timer Microprocessor IC7501.

1-2. SELF- TEST INDICATION DISPLAY

This VTR has a self- diagnosis and display function. If the VTR detects trouble during installation or during use, one of the following Fault indication Codes will automatically appear in the VTR display. Fault indication codes are displayed in the form of a single English letter followed by two numbers, as for example "H01".

Note: 1. The indication "U" is displayed on the FIP while power remains on.
2. Otherwise, the indication "H" or "F" is displayed on the FIP, and the power is automatically turned off.
When the power is turned on again, the Fault Indication Code will disappear and the unit will return to normal display mode (either clock or counter).
3. This Fault Indication Code will be stored in the Timer microprocessor even with the AC plug disconnected.
The two- digit number portion of the stored Fault Indication Code can be redisplayed in the FIP's "second" display position (the last 2 digits on the light) by placing the unit is Service Mode Number 2 when turning on Service Information Display as for example "01" or "02" etc.
If a second error occurs, only the most recent error will be displayed and stored.
4. To erase the stored Fault Indication Code data, press the FF and EJECT buttons simultaneously for 5 seconds.

< FIP >



INDICATION	CAUSE	REMEDY/ CHECK
H01	After cylinder lock is detected, the cylinder does not start rotating again even after tape unloading.	Check the cylinder- motor drive circuit.
H02	Cassette tape is not wound up during tape unloading except Eject mode.	Check the capstan- motor drive circuit.
F03	Mechanism locks during mode transition except Eject mode.	1.Check the loading- motor drive circuit. 2.Check the mechanism phase alignment. 3.Check the Mode Switch.
F04	Mechanism locks during tape unloading.	1.Check the loading- motor drive circuit. 2.Check the mechanism phase alignment.
F05	Cassette tape is not wound up during tape unloading in Eject mode.	1.Check the capstan- motor drive circuit. 2.Check the Supply/ Take- up reel pulse.
F06	Mechanism locks after tape unloading in Eject mode.	1.Check the loading- motor drive circuit. 2.Check the mechanism phase alignment for Cassette Holder Unit.
F07	Rec power voltage does not appear in Rec mode.	Check the Rec power supply circuit.
F08	Rec power voltage appears except Rec mode.	Check the Rec power supply circuit.
F09	No serial clock transmission between IC6001 and IC7501.	Check the serial clock circuit.

Fig. S12 Self- Test Indication Display

1-3. SERVICE INFORMATION DISPLAY

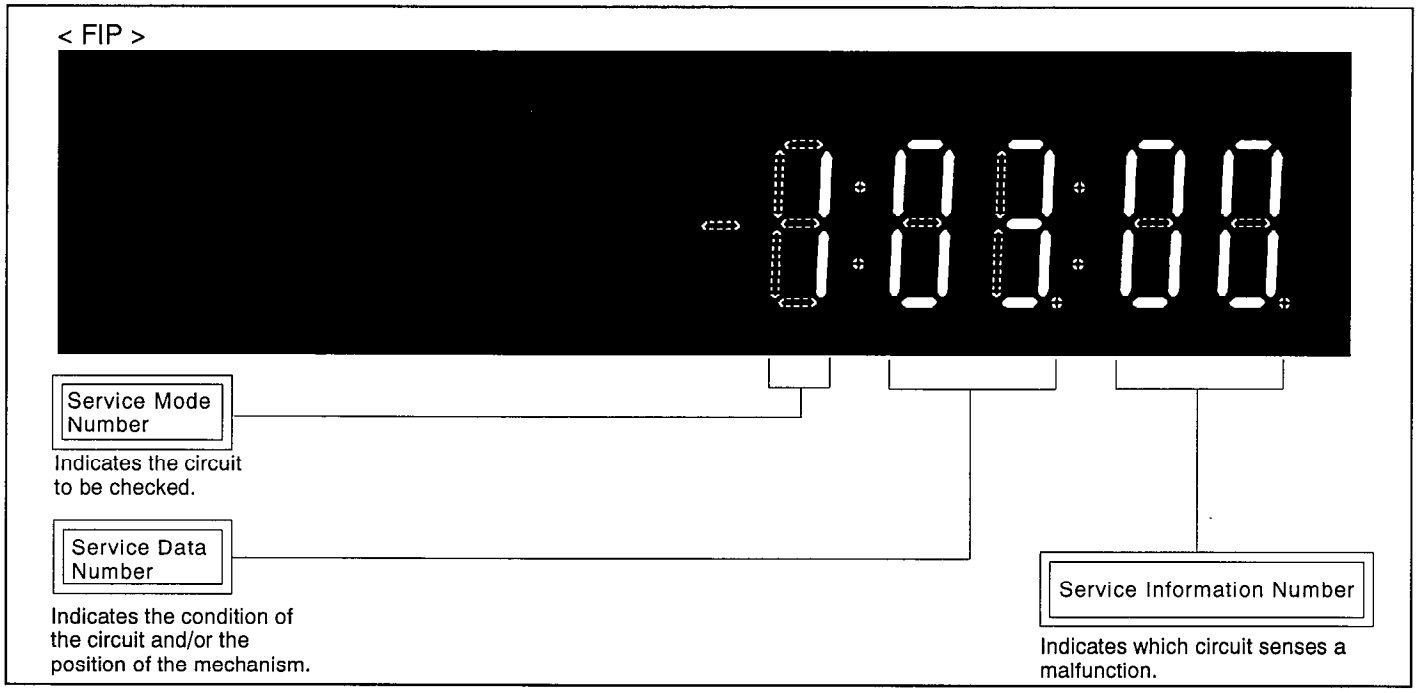

< FIP >
Service Mode Number
Indicates the circuit to be checked.
Service Data Number
Indicates the condition of the circuit and/or the position of the mechanism.
Service Information Number
Indicates which circuit senses a malfunction.

Fig. S13 Service Information Display

1-3-1. Purpose of Service Information Display

This information aids trouble shooting by indicating the source of the malfunction. The service mode number & service data number are used by the technician during repair while the service information can be used by the consumer to diagnose malfunctions allowing the technician to provide a more accurate repair cost estimate and reduce repair time.

1-3-2. Turning on Service Information Display

Press the FF and EJECT buttons simultaneously.

In the Service Information Display, there are five digits divided into 3 functions. The first digit indicates which of the 7 service modes that the unit is currently in.

MODE 0 : Not Used
MODE 1 : Checks tape protection circuit
MODE 2 : Checks tape transport mechanism
MODE 3 : Checks mode switching operation
MODE 4 : Checks control buttons
MODE 5 : Checks capstan motor
MODE 6 : Checks cylinder motor
MODE 7 : Checks loading/unloading operation

The second and third digits are service data which indicate the condition of the circuit or mechanism being checked.

The forth and fifth digit is the service information display. It is to be used by the consumer to help determine the source of a malfunction. The service information display operates independently of the service modes and stores the fault indication in memory for as long as AC power is not supplied.

1-3-3. Use of Service Modes

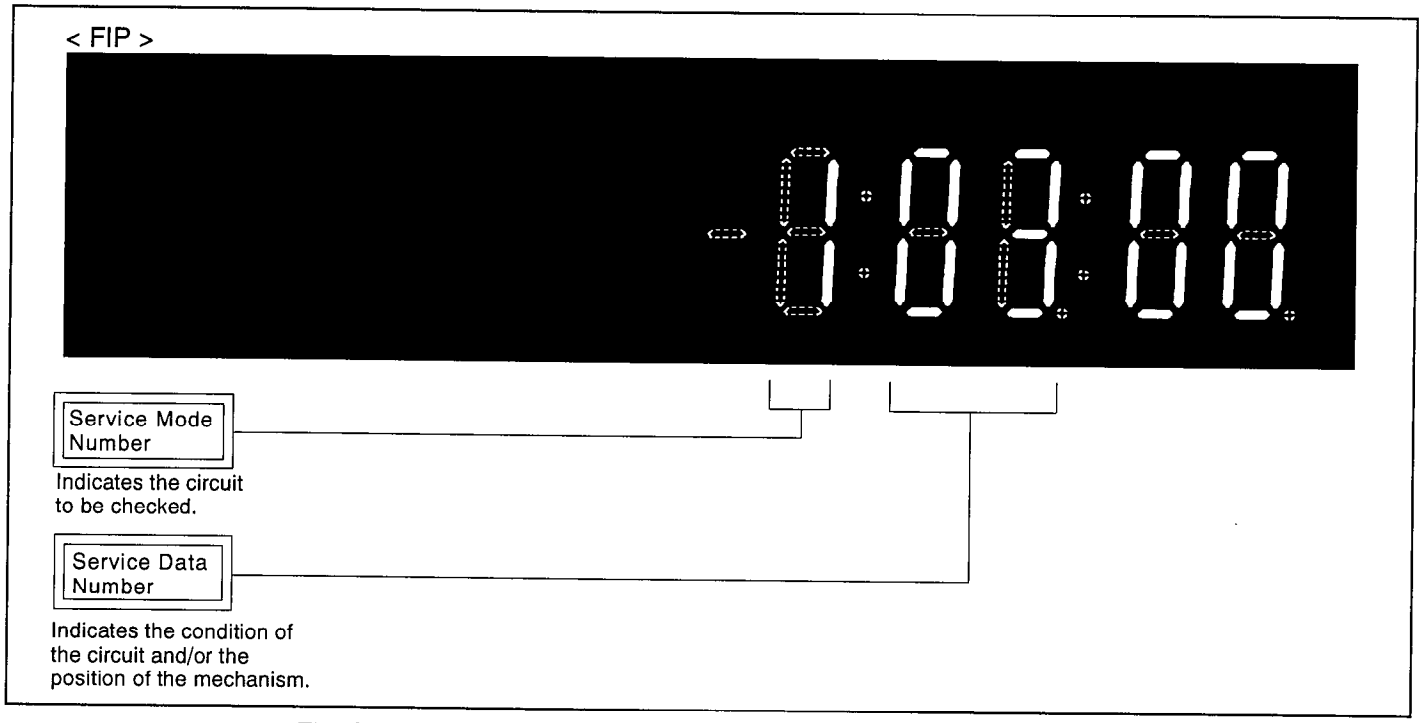

< FIP >
Service Mode Number
Indicates the circuit to be checked.
Service Data Number
Indicates the condition of the circuit and/or the position of the mechanism.

Fig. S14 Service Mode Number and Service Data Number on S.I.D.

(1) Turn on Service Information Display.

(2) To change Service Modes press the FF and EJECT buttons simultaneously.

(3) Mode 0 : Not Used.

(4) Mode 1 : Check that the Sensor LED, Supply & Take-up Sensor circuits check the circuits by blocking the light from the Sensor LED to either or both Supply & Take-up Sensors. When the light is blocked to both sensors, "00" should be indicated on the service data number. When the light is blocked to the supply sensor, " 01 " should be indicated.

(5) Mode 2 : Checks the mode switch circuit while indicating mechanism position. Service Data Numbers indicate the position of the mode switch and there by the mechanism position.

(6) Mode 3 : Checks that mode switch circuit operations have been completed. Service Data Number should indicate "00" after each mechanism operation iscompleted.

(7) Mode 4 : Checks the operation circuit. Indicates if IC6001 receives the operating commands from the mode buttons and/or remote controller.

(8) Mode 5 : Checks the capstan motor circuit. Indicates if the IC6001 has received the command to rotate the capstan motor.

(9) Mode 6 : Check the cylinder motor circuit. IC6001 has received the command to rotate the cylinder motor.

(10) Mode 7 : Checks the Loading/ Unloading Operation. The Loading Motor rotates for loading operation when the " PLAY " button is pressed. The Loading Motor rotates for unloading operation when the " STOP " button is pressed. This mode can be displayed indefinitely until the POWER button is pressed.

<NOTE> Refer to Fig. S17 for details of Service Data Number.

1-3-4. Service Information Number

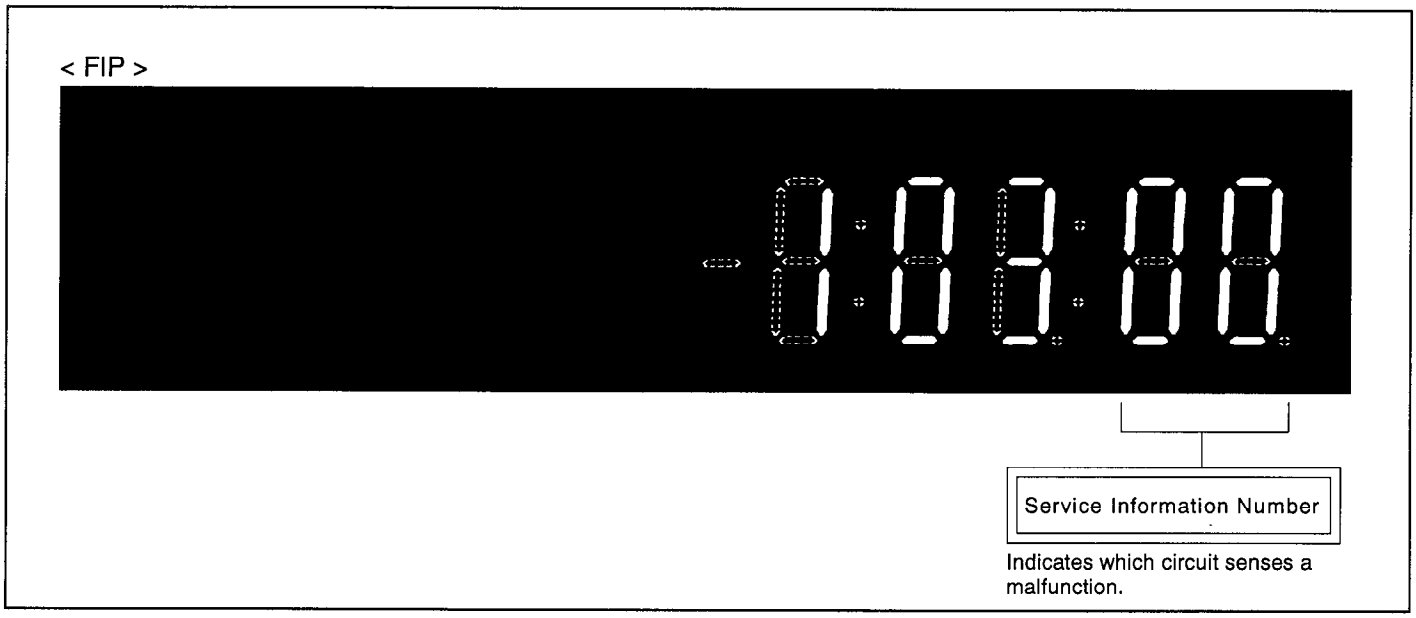


Fig. S15 Service Information Number on S. I. D.

Refer to Fig. S16 for details of Service Information Number.

Note:

The Service Information Number display is independent of the service mode display.
The Service Information Number will be stored as long as AC power is not supplied. If a second error occurs, only the most recent error will be displayed.

Service Information Number	Malfunction
00	Normal (No problem)
01	Cylinder stop
02	Tape reel stop
03	Stop at position other than 04 or 06 (Faulty loading motor)
04	Stop during unloading
05	Faulty capstan rotation
06	Stop during Cassette-IN/EJECT operation
07	REC Power voltage error in REC Mode
08	REC Power voltage error except REC Mode
09	Main Serial communication error between system control and Timer

Fig. S17 Detail Service Information Numbers

Service mode Number	Note for checking Service Data Numbers	Service Data Numbers	Indication	Remarks
1	———	00	No light detected at either sensor.	Tape not required
		01	Tape Beginning. Light to Supply Photo Sensor is blocked.	
		02	Tape End. Light to Take-up Photo Sensor is blocked.	
		03	Light detected at both sensors.	
2	———	00	EJECT	Tape Required *1: STOP3; The Pinch Roller is on the capstan motor shaft. *2: STOP; The Pinch Roller is off the capstan motor shaft. Refer to Fig.S18 to Check mechanism Position and timing.
		01	Cassette-down	
		02	REV	
		03	Loading/Unloading	
		04	PLAY/REC, STILL/PAUSE, CUE, FWD SLOW, STOP3*1	
		05	STOP *2	
		06	FF/REW	
		07	Intermediate position.	
3	Disregard service data displayed until mechanism operation is completed. Then the display should indicate "00".	00	Any display other than "00" indicates a fault in the mode switch circuit or system.	Tape Required
4	Display only when the operating button is pressed.	———		Tape not required
5	Left digit only, disregard Right digit display.	01 (Left Digit / Right Digit)	8, 9, u, A, -, n, L, and no display indicate that the Capstan motor "PLAY" command received by IC6001.	Tape required. If a symbol other than those listed is displayed, a malfunction in that circuit is indicated.
	Right digit only, disregard Left digit display.	07 (Left Digit / Right Digit)	1, 2, 3, 4, 5, 6, 7, indicate that the Capstan motor "CUE, FF, Forward slow" commands received by IC6001.	
	Right digit only, disregard Left digit display.	0 (Left Digit / Right Digit)	8, 9, u, A, -, n, L, and no display indicate that the Capstan motor "Reverse, Rew, Reverse Slow" commands received by IC6001.	
6	Left digit only, disregard Right digit display.	10 (Left Digit / Right Digit)	1, 3, 5, 7, 9, A, n and no display indicate that the cylinder motor "ON" command received by IC6001.	Tape required. If a symbol other than those listed is displayed, a malfunction in that circuit is indicated.

Fig. S17 Detail Service Data Number

1-3-5. Timing Chart from Mode SW to System control IC6001

System control IC6001 senses the mechanism position through the Mode SW.
Fig. S18 shows the timing for Service Mode Number 2.

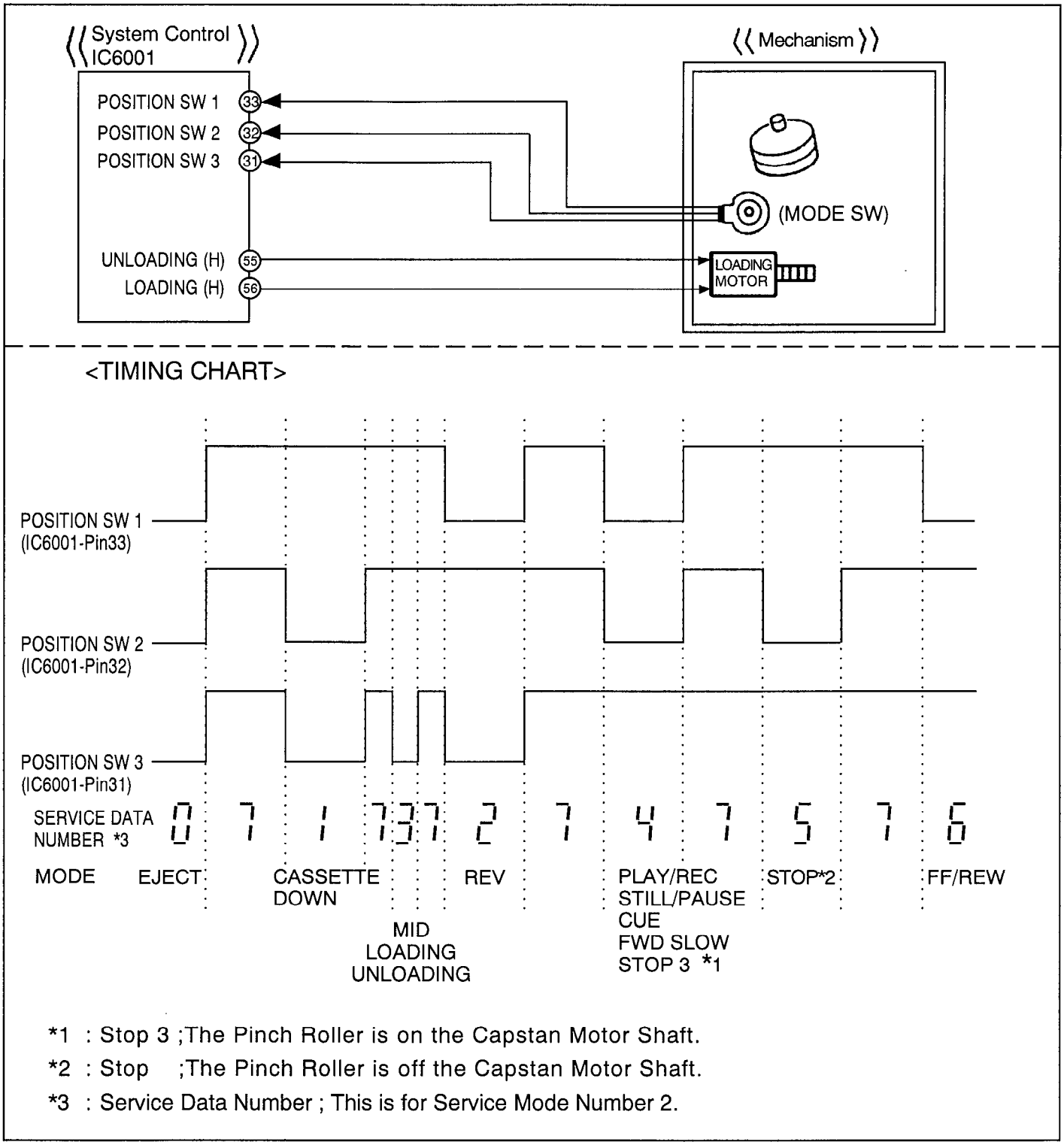
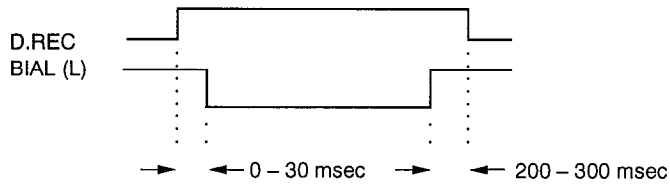


Fig. S18 Timing Chart of Mode SW

1-3-6. Input / Output Chart For IC6001 (M37776V1BV)

<table>
<tr><th>Pin Number</th><th>Input/Output</th><th>Port Name</th><th>Function</th></tr>
<tr><td>2</td><td>I</td><td>DEW SNS</td><td>This port is more than 1.36 V during detecting the dew formation.</td></tr>
<tr><td>3</td><td>I</td><td>DURTY HEAD</td><td>Envelope input for detecting the clog on Video Head.</td></tr>
<tr><td>4</td><td>I</td><td>HIFI-JAPAN
HIFI-NTSC
HIFI-PAL
NORMAL-PAL
NORMAL-JAPAN
NORMAL-NTSC</td><td>Audio mode and destination setting port.
<table>
<tr><th>INPUT VOLTAGE</th><th>AUDIO MODE AND DESTINATION</th></tr>
<tr><td>MORE THAN 4.0 V</td><td>HIFI-JAPAN (FOR JAPAN)</td></tr>
<tr><td>3.0 V ~ 4.0 V</td><td>HIFI-NTSC (FOR NORTH AMERICA, BRAZIL)</td></tr>
<tr><td>2.5 V ~ 3.0 V</td><td>HIFI-PAL (FOR ARGENTINA)</td></tr>
<tr><td>2.0 V ~ 2.5 V</td><td>NORMAL-PAL (FOR ARGENTINA)</td></tr>
<tr><td>1.0 V ~ 2.0 V</td><td>NORMAL-JAPAN (FOR JAPAN)</td></tr>
<tr><td>LESS THAN 1.0 V</td><td>NORMAL-NTSC (FOR NORTH AMERICA, BRAZIL)</td></tr>
</table></td></tr>
<tr><td>5</td><td>I</td><td>UDD4/UDD2
TDD4/TDD2
LDD4/LDD2</td><td>Cylinder driver and video Head selection port.
<table>
<tr><th>INPUT VOLTAGE</th><th>CYLINDER DRIVER AND VIDEO HEAD</th></tr>
<tr><td>MORE THAN 4.0 V</td><td>UDD 4 HEAD</td></tr>
<tr><td>3.0 V ~ 4.0 V</td><td>UDD 2 HEAD</td></tr>
<tr><td>2.5 V ~ 3.0 V</td><td>TDD 2 HEAD</td></tr>
<tr><td>2.0 V ~ 2.5 V</td><td>TDD 4 HEAD</td></tr>
<tr><td>1.0 V ~ 2.0 V</td><td>LDD 2 HEAD</td></tr>
<tr><td>LESS THAN 1.0 V</td><td>LDD 4 HEAD</td></tr>
</table></td></tr>
<tr><td>6</td><td>I</td><td>NORMAL/SERVICE
TEST2/TEST</td><td>NORMAL/SERVICE/TEST2/TEST mode setting port.
<table>
<tr><th>INPUT VOLTAGE</th><th>MODE</th></tr>
<tr><td>MORE THAN 4.0 V</td><td>NORMAL</td></tr>
<tr><td>2.5 V ~ 4.0 V</td><td>SERVICE</td></tr>
<tr><td>1.0 V ~ 2.5 V</td><td>TEST2</td></tr>
<tr><td>LESS THAN 1.0 V</td><td>TEST</td></tr>
</table></td></tr>
<tr><td>7</td><td>I</td><td>S-PHOTO</td><td>This port receives the signal when supply photo sensor detects the tape end.</td></tr>
<tr><td>8</td><td>I</td><td>T-PHOTO</td><td>This port receives the signal when take-up photo sensor detects the tape beginning.</td></tr>
<tr><td>9</td><td>I</td><td>TRACKING ENVE</td><td>Playback envelope input for tracking adjustment.</td></tr>
<tr><td>10</td><td>O</td><td>T SNS LED (L)</td><td>Sensor LED drive signal output.
When this port supplies the low signal, the sensor LED is lit.</td></tr>
<tr><td>11</td><td>O</td><td>CURRENT LIMIT</td><td>Capstan motor current limitter control.</td></tr>
<tr><td>12</td><td>O</td><td>CAP. R/S/F</td><td>Capstan rotation direction control.
REVERSE : HIGH
STOP : MIDDLE
FORWARD : LOW</td></tr>
<tr><td>13</td><td>O</td><td>ART V/H/N</td><td>This port supplies artificial vertical sync signal to stabilize the picture in special playback mode.</td></tr>
<tr><td>14</td><td>O</td><td>NC</td><td>Not Used</td></tr>
<tr><td>15</td><td>O</td><td>ROTARY SW</td><td>Rotary switching signal output.</td></tr>
<tr><td>16</td><td>O</td><td>HEAD AMP SW</td><td>Head amp switching signal output.</td></tr>
<tr><td>17</td><td>I</td><td>ENVE. SELECT</td><td>This port receives the playback envelope signal level to select the video head in special playback mode.</td></tr>
<tr><td>18</td><td>O</td><td>VIDEO H. SW</td><td>Video head switching signal output.</td></tr>
</table>

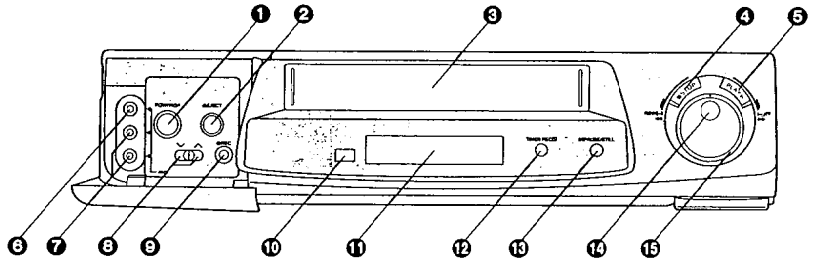
<table>
<tr><th>Pin Number</th><th>Input/Output</th><th>Port Name</th><th>Function</th></tr>
<tr><td>19</td><td>O</td><td>AUDIO H. SW</td><td>HIFI audio head switching signal output.</td></tr>
<tr><td>20</td><td>O</td><td>D. REC (H)</td><td>Video signal recording on/off control.</td></tr>
<tr><td>21</td><td>O</td><td>C. EMPHASIS (H)</td><td>HIFI audio recording current control signal before starting the recording.
During TEST mode, this port is low.</td></tr>
<tr><td>22</td><td>O</td><td>NC</td><td>Not Used</td></tr>
<tr><td>23</td><td>O</td><td>NC</td><td>Not Used</td></tr>
<tr><td>24</td><td>O</td><td>VIDEO EE (L)</td><td>This port is low during EE mode.</td></tr>
<tr><td>25</td><td>I / O</td><td>EE/VV/TRICK</td><td>Special playback mode control.
MEMORY MODE WITH PLAYBACK MODE : LOW
SPECIAL PLAYBACK MODE : LOW
PLAYBACK MODE : MIDDLE
EE MODE : HIGH</td></tr>
<tr><td>26</td><td>O</td><td>BIAS (L)</td><td>Normal audio recording control.
 
</td></tr>
<tr><td>27</td><td>I</td><td>BR (H) / NTSC</td><td>Destination setting port.
(Classify North America and Brazil in the pin 4).
NORTH AMERICA and BRAZIL have been set :
BRAZIL in the pin 4 and this port is high.
NORTH AMERICA and BRAZIL have been set :
N.AMERICA in the pin 4 and this is low.</td></tr>
<tr><td>28</td><td>O</td><td>FM MUTE (H)</td><td>This port is high during special playback (CUE, REV, SLOW, STILL) mode.</td></tr>
<tr><td>29</td><td>O</td><td>AI (L)</td><td>AI playback control.
Select AI mode based on the voltage of TRACKING ENVE.</td></tr>
<tr><td>30</td><td>O</td><td>TV (L) / VTR (H)</td><td>TV / VTR switch output.</td></tr>
<tr><td>31</td><td>I</td><td>POSITION SW3</td><td rowspan="3">
<table>
<tr><th>P. SW3</th><th>P. SW2</th><th>P. SW1</th><th>POSITION (MODE) NAME</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>EJECT</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>CASSETTE DOWN</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>REV, REV SLOW</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>MID (LOADING/UNLOADING)</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>PLAY/REC, STILL/PAUSE, CUE, FWD SLOW STOP *1</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>STOP</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>FF/REW</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>INTERMEDIATE</td></tr>
</table>
*1 The Pinch Roller is on the capstan motor shaft.</td></tr>
<tr><td>32</td><td>I</td><td>POSITION SW2</td></tr>
<tr><td>33</td><td>I</td><td>POSITION SW1</td></tr>
<tr><td>36</td><td>I</td><td>12M. START (H)</td><td>Clock selection port to release the reset.</td></tr>
<tr><td>38</td><td>I</td><td>12MHz IN</td><td>Oscillator input.</td></tr>
<tr><td>39</td><td>O</td><td>12MHz OUT</td><td>Oscillator output.</td></tr>
</table>

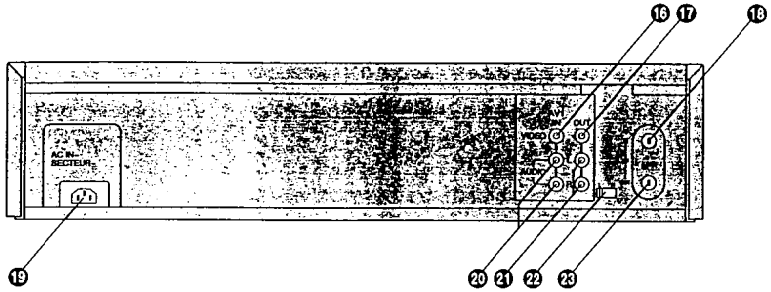
<table>
<tr><th>Pin Number</th><th>Input/Output</th><th>Port Name</th><th>Function</th></tr>
<tr><td>43</td><td>I</td><td>RESET (L)</td><td>This port is low while IC6001 is reset.</td></tr>
<tr><td>44</td><td>I</td><td>SHORT DOWN</td><td>Transistor short detection port.</td></tr>
<tr><td>45</td><td>I</td><td>KILLER (H)</td><td>PAL-M / NTSC detection port when SYSTEM SW has been set AUTO position and EE mode in BR model.</td></tr>
<tr><td>46</td><td>I</td><td>PAL-M (H)</td><td>When SYSTEM SW has been set AUTO position and playback mode in BR model.
PAL-M : HIGH
NTSC : LOW</td></tr>
<tr><td>47</td><td>O</td><td>LINE3 (A3) (H)</td><td>Input / output circuit control signal.</td></tr>
<tr><td>48</td><td>O</td><td>LINE2 (A2) (H)</td><td>Input / output circuit control signal.</td></tr>
<tr><td>49</td><td>O</td><td>LINE1 (A1) (H)</td><td>Input / output circuit control signal.</td></tr>
<tr><td>50</td><td>I / O</td><td>L1 / L2 / TUNER</td><td>Input / output circuit control signal.</td></tr>
<tr><td>51</td><td>O</td><td>POWER OFF (H)</td><td>Power on /off control.</td></tr>
<tr><td>52</td><td>O</td><td>FF / REW (L)</td><td>This port is low during FF and REW modes.</td></tr>
<tr><td>53</td><td>O</td><td>V. CHANGE (L)</td><td>This port is low while the loading motor torque is increased in FF and REW modes.</td></tr>
<tr><td>54</td><td>O</td><td>LM LIMIT (H)</td><td>Loading motor torque limitter output.</td></tr>
<tr><td>55</td><td>O</td><td>UNLOADING (H)</td><td>This port is high while the mechanism is unloaded.</td></tr>
<tr><td>56</td><td>O</td><td>LOADING (H)</td><td>This port is high while the mechanism is loaded.</td></tr>
<tr><td>57</td><td>I / O</td><td>6H / 4H / 2H</td><td>SP/LP/SLP control signal.</td></tr>
<tr><td>58</td><td>I / O</td><td>L / R / STEREO</td><td>Audio mode control signal.<table><tr><th>CONTROL SIGNAL</th><th>AUDIO MODE</th></tr><tr><td>HIGH</td><td>L</td></tr><tr><td>MIDDLE</td><td>R</td></tr><tr><td>LOW</td><td>L + R</td></tr></table></td></tr>
<tr><td>59</td><td>O</td><td>NTSC (L)</td><td>This port is low during NTSC mode.</td></tr>
<tr><td>60</td><td>O</td><td>PAL / AUTO / NTSC</td><td>System mode control signal. PAL : HIGH
AUTO : MIDDLE
NTSC : LOW</td></tr>
<tr><td>61</td><td>I / O</td><td>EE BIL (M) / EX (L)</td><td>Bilingual control signal.</td></tr>
<tr><td>62</td><td>I / O</td><td>HIFI / MIX / NOR.</td><td>Audio mode control signal.<table><tr><th>CONTROL SIGNAL</th><th>AUDIO MODE</th></tr><tr><td>HIGH</td><td>HIFI</td></tr><tr><td>MIDDLE</td><td>MIX</td></tr><tr><td>LOW</td><td>NORMAL</td></tr></table></td></tr>
<tr><td>63</td><td>I</td><td>STEREO (L)</td><td rowspan="2">Tuner audio mode detection port.<table><tr><th>TUNER AUDIO</th><th>STEREO</th><th>BILINGUAL</th></tr><tr><td>STEREO</td><td>L</td><td>H</td></tr><tr><td>BILINGUAL</td><td>H</td><td>L</td></tr><tr><td>MONAURAL</td><td>H</td><td>H</td></tr></table></td></tr>
<tr><td>64</td><td>I</td><td>BILIN (L)</td></tr>
</table>

<table>
<tr><th>Pin Number</th><th>Input/Output</th><th>Port Name</th><th>Function</th></tr>
<tr><td>65</td><td>O</td><td>SSB. DATA. OUT</td><td>Audio and Video SSB control signal.</td></tr>
<tr><td>66</td><td>I</td><td>ABS NORM (L)
/A. ADJUST</td><td>Compulsory normal audio mode and audio automatic adjustment control.</td></tr>
<tr><td>67</td><td>O</td><td>SSB. CLOCK</td><td>Audio and Video SSB control signal.</td></tr>
<tr><td>68</td><td>O</td><td>S. DATA. OUT</td><td>Serial data output.</td></tr>
<tr><td>69</td><td>I</td><td>S. DATA IN</td><td>Serial data input.</td></tr>
<tr><td>70</td><td>O</td><td>S. CLOCK</td><td>Serial clock output.</td></tr>
<tr><td>71</td><td>O</td><td>FWD X2 (H)</td><td>This port is high during audio double speed.</td></tr>
<tr><td>72</td><td>O</td><td>AAA. OFF (H)</td><td>This port is low during audio automatic adjustment mode.</td></tr>
<tr><td>73</td><td>O</td><td>T. SAVE (H)</td><td>Timer microprocessor reset control.</td></tr>
<tr><td>75</td><td>O</td><td>CUE / REV / V2 (H)</td><td>This port is high during special playback mode (CUE, REV, DOUBLE SPEED PLAYBACK).</td></tr>
<tr><td>76</td><td>O</td><td>NC</td><td>Not Used.</td></tr>
<tr><td>79</td><td>I</td><td>S. REEL. PULSE</td><td>Supply reel pulse input.</td></tr>
<tr><td>80</td><td>I</td><td>T. REEL. PULSE</td><td>Take-up reel pulse input.</td></tr>
<tr><td>81</td><td>I</td><td>SSB. ON (H)</td><td rowspan="2"><table><tr><th>SSB. ON</th><th>VIDEO / AUDIO</th><th>VIDEO SSB</th><th>AUDIO SSB</th></tr><tr><td>L</td><td>L</td><td>X</td><td>X</td></tr><tr><td>L</td><td>H</td><td>O</td><td>X</td></tr><tr><td>H</td><td>L</td><td>X</td><td>O</td></tr><tr><td>H</td><td>H</td><td>O</td><td>O</td></tr></table></td></tr>
<tr><td>83</td><td>I</td><td>VIDEO / AUDIO</td></tr>
<tr><td>82</td><td>I</td><td>ABS TV (L)</td><td>This port is low during compulsory TV mode.</td></tr>
<tr><td>87</td><td>I</td><td>S TAB (L)</td><td>This port is low while the cassette tape with safety tab is inserted.</td></tr>
<tr><td>100</td><td>O</td><td>LINE A MODE (L)</td><td>AUTO TRACKING detection control.</td></tr>
</table>

Controls and Connections

This gives a detailed explanation of the function of each button, switch and connection socket.





❶ **POWER ⏻/I**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still connected to the main AC power.

❷ **EJECT**
To eject a video cassette.

❸ **Cassette Compartment**
Insert a video cassette here.

❹ **STOP**
To stop any playback or recording.

❺ **PLAY**
To start playback. "▷" is lit.
For the repeat playback function.

❻ **VIDEO IN (AV2)**
To connect a video cable to a video camera or another video recorder.

❼ **AUDIO IN (AV2)**
To connect audio cables to a video camera or another video recorder.

❽ **∨∧**
To select Channel numbers (TV station).

❾ **REC**
To make a recording.

❿ **Infra-red Remote Control Receiver Window**

⓫ **Display**

⓬ **TIMER REC**
To turn the timer recording function on and off.
⏲ is lit when **TIMER REC** is on.
When using timer recording function, the normal VTR operation is not possible unless this button is set to off.

⓭ **PAUSE/STILL**
In the stop mode: Still picture (Jog/Shuttle mode).
During playback: Still picture (Jog/Shuttle mode).
During recording: To interrupt recording.

⓮ **Jog Dial**
To locate any desired frame with precision.

⓯ **Shuttle Ring**
In the stop mode: To rewind or fast forward the tape.
In the playback mode:
To search picture backward or forward.
In the still playback mode:
To adjust playback speed backward or forward.
In the rewind or fast forward mode:
To obtain high speed picture.

⓰ **VIDEO IN (AV1)**
To connect a cable from a video camera or another video recorder.

⓱ **VIDEO OUT**
To connect a video cable to a TV.video input or another video.

⓲ **RF IN**
To connect an external antenna.

⓳ **AC IN~**
To connect the AC line cord.

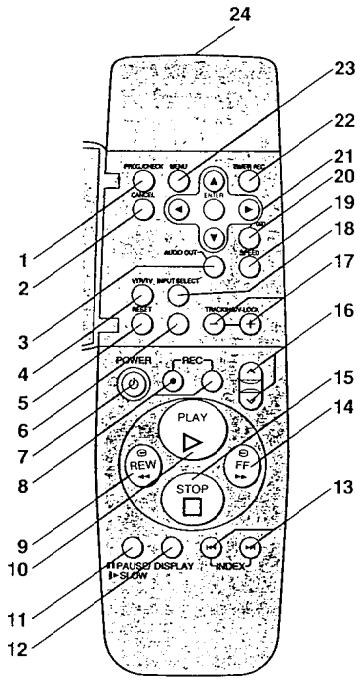
⓴ **AUDIO IN (AV1)**
To connect an audio cable to a video camera or another video recorder.

㉑ **AUDIO OUT**
To connect an audio cable to a TV or another video recorder.

㉒ **L/H**
Used to select the RF Converter to either Channel US3 or US4.

㉓ **RF OUT**
To connect to the antenna terminal on a TV set.

Infra-red Remote Controller



1 PROG./CHECK
To set and check timer programs.

2 CANCEL
To cancel the settings made for timer recording

3 AUDIO OUT
To select the desired sound mode.
At the every push of this button, the audio output mode changes as follows.

→Stereo→L→R→Normal audio track→

While the broadcast signals are being received:

→Stereo→L→R→

The L and R Indicators show which sound mode is selected in the following way.

Stereo: Both the L and R Indicators are lit.
L: The L Indicator is lit.
R: The R Indicator is lit.
Normal: Both the L and R Indicators are not lit.

4 VTR/TV
To select the VTR mode or TV mode.

5 RESET
To reset the tape counter (elapsed time) to "0:00.00".
- The tape counter is automatically reset to "0:00.00" when a video cassette is inserted.

6 No function

7 POWER
To switch the VTR from on to standby mode or vice versa. In standby mode, the VTR is still connected to the main AC power.

8 REC
To make a recording.
- Press both buttons simultaneously.

9 REW (REWIND)
In the stop mode: To rewind the tape.
In the playback mode: To search backward.
In the rewind mode: To obtain high speed picture.
"◁◁" is lit.

10 PLAY
To start playback. "▷" is lit.
For the repeat playback function.

11 PAUSE/SLOW
During playback:
- By pressing; Still picture. "❚❚" is lit.
- By pressing for more than 2 seconds; Slow playback. "▷" is lit.

During recording: To interrupt recording temporarily.

12 DISPLAY
To change the indication on the VTR Display.

→Clock→Counter→Remaining Tape Time→

13 INDEX
For index search function.

14 FF (FAST FORWARD)
In the stop mode: To fast forward the tape.
In the playback mode: To search forward.
In the fast forward mode: To obtain high speed picture.
"▷▷" is lit.

15 STOP
To stop playback or recording.

16 ∨∧
To select the channel number (TV station) of the VTR.

17 TRACKING/V-LOCK
For manual tracking adjustment
The + and – buttons are used to adjust the tracking when, for example, noise bars on the picture are more effectively removed manually than by the automatic digital tracking control. After making a manual adjustment, press both buttons together to return to automatic digital tracking control.

For slow tracking adjustment
When noise bars appear **during Still or Slow playback**, switch over to **slow playback** and adjust with the + or – Button to reduce noise bars.

For vertical locking adjustment
Use the + and – buttons to minimize any vertical jitter **during still-picture playback**.

18 INPUT SELECT
To select the "A1" or "A2" external recording source.

19 SPEED
To select the tape speed desired for recording.
SP gives the best picture quality.
EP gives the longest recording time.

20 OSD
To turn On Screen Display Function on or off.

21 ▲▼◀▶/ENTER
To make selections from On Screen Display.

22 TIMER REC
To turn the timer recording function on and off.
[⏲] is lit when **TIMER REC** is on.
When using timer recording function, normal VTR operation is not possible unless this button is set to off.

23 MENU
To make MENU On Screen Display appear on the TV screen.

24 Infra-red Transmitter

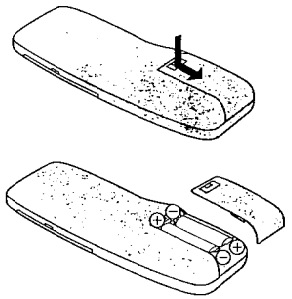
Power Source for the Remote Controller

The remote controller is powered by 2 "AA", "UM3" or "R6" size batteries. The life of the batteries is about one year, although this depends on the frequency of use.

Precautions for Battery Replacement

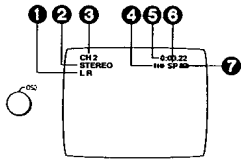
- Load the new batteries with their polarity (⊕ and ⊖) aligned correctly.
- Do not apply heat to the batteries, or an internal short-circuit may occur.
- If you do not intend to use the remote controller for a long period of time, remove the batteries and store them in a cool and dry place.
- Remove spent batteries immediately and dispose of them.
- Do not use an old and a new battery together, and never use an alkaline battery with a manganese battery.

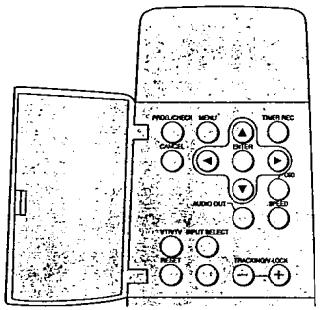
Installing the Batteries



On Screen Display

Press **OSD** to make the On Screen Display appear on the TV screen.
- To make this display disappear, press **OSD** again.





❶ **L and R Indicators**

❷ **Indicator for Stereo and SAP Reception**
When receiving a TV program, automatically indicates when a TV program is broadcast with the stereo and/or AUDIO II (SAP) sound system.

❸ **Program Position (Channel)**

❹ **Tape Running Display**

Stop, Eject	
Rewind, Review	◀◀
Fast Forward, Cue	▶▶
Playback	▶
Still Playback	❚❚
Recording	●
Recording Pause	❚❚●
Slow Playback	❚▶
Repeat Playback	R

❺ **Present Time/Tape Counter**

Information	Display
Present Time	17:24
Tape Counter	−2:35.47
Remaining Tape Time	REMAIN 2:34
Index Search	S 01

❻ **Tape Speed Indicator**

❼ **Cassette-in Indicator**

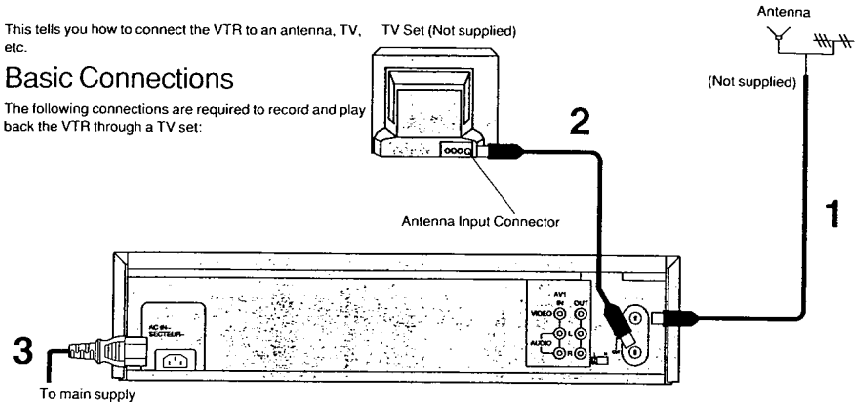
Notes:
- On Screen Display may be disturbed or disappear during special playback.
- On Screen Display may be disturbed depending on the played back tape or the input signal.

Connections

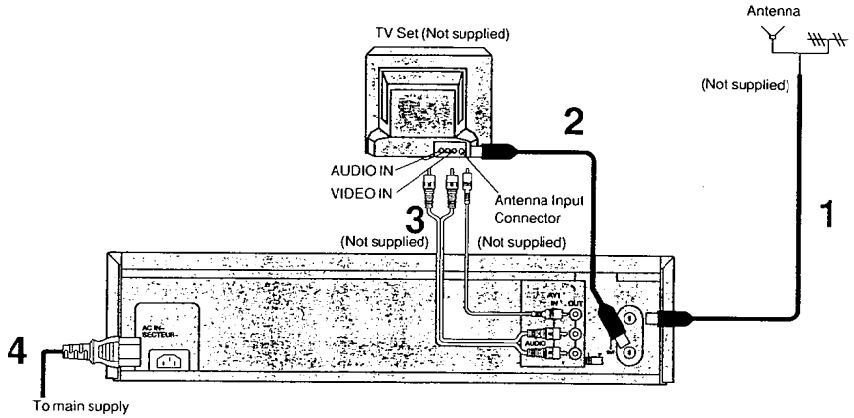
This tells you how to connect the VTR to an antenna, TV, etc.

Basic Connections

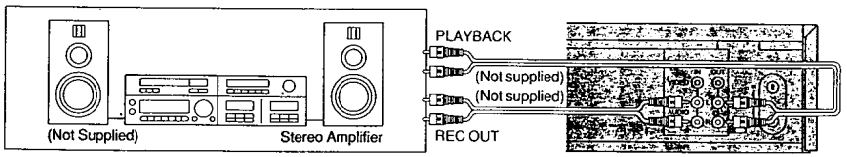
The following connections are required to record and play back the VTR through a TV set:



Connection to a TV Set with the Audio/Video Input Connectors



•Connection to a Stereo Amplifier



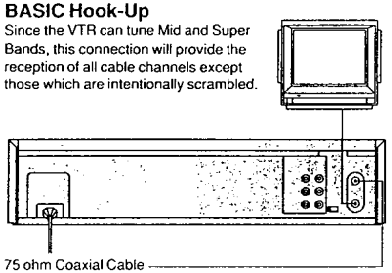
Cable Connection

Cable-VTR-TV (For CATV/PAY Channels Recording/Playback)

The VTR has an extended range, and can tune the Low-Band, Mid-Band, Super-Band, Hyper-Band, Ultra-Band and Special cable channels (Channels A-5–A-1, A–W, AA–FFF, GGG–WWW, WWW+1–WWW+12, 100–125, 5A). Also, the VTR can tune to any of the 56 UHF channels (14–69). Refer to **Storing TV Broadcasts into your VTR** on page 14.

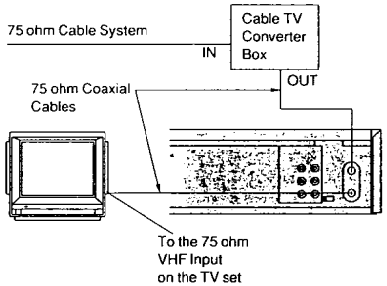
BASIC Hook-Up

Since the VTR can tune Mid and Super Bands, this connection will provide the reception of all cable channels except those which are intentionally scrambled.

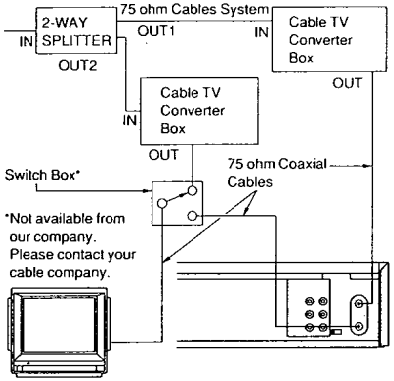


However, if you subscribe to a special channel which is scrambled—you will probably have a descrambler box for proper reception. The VTR by itself cannot properly receive a scrambled program since it does not contain a descrambler. In order for the VTR to properly receive a scrambled program, your existing descrambler must be used. There are two commonly used methods of connection in this case.

Typical Cable System Hook Ups with Cable Converter/Descrambler Boxes



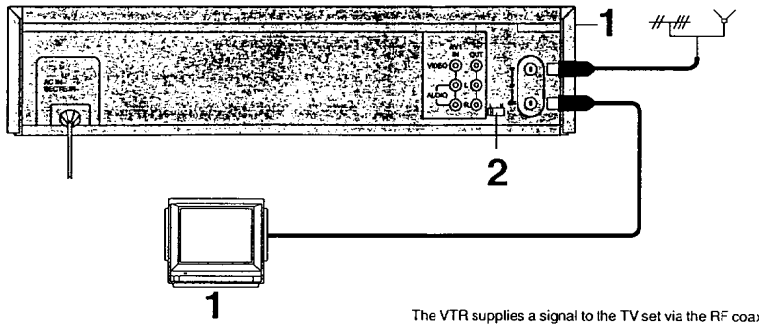
The above cable hook-up allows VTR-TV functions except for viewing one channel while recording another.



The above cable hook-up allows VTR functions, including viewing one channel while recording another, but it requires two cable TV Converter/Descrambler Boxes, one Switch Box and one 2-Way Splitter.

Since the VTR has an extended range of tuning, tuning-programing of non-scrambled Mid-Band and Super-Band TV programs is possible. When a cable converter or descrambler box is connected to the VTR, all timer-controlled recording functions will continue to operate with the exception of changing channels automatically. CATV Channel selection will have to be performed with the cable converter. Timer-controlled recording from CATV Channels is therefore limited to one channel at any given time.

Tuning the TV to your VTR



The VTR supplies a signal to the TV set via the RF coaxial cable on channel US3 or US4.

It is possible to view the video picture on your TV in the same way that you watch TV broadcasts.

If you have connected the VTR to the TV through the video and audio input sockets then you do not need to follow the procedure mentioned below.

Operations

1 POWER ⏻/I

Turn on the TV and VTR.

2 L H

Select the video playback channel which is not occupied with any TV station.

L: Channel US3
H: Channel US4

Channel Reception Check

1 Set channel 3 or 4 on your TV (selected in step **2**) in order to check a proper broadcast reception.

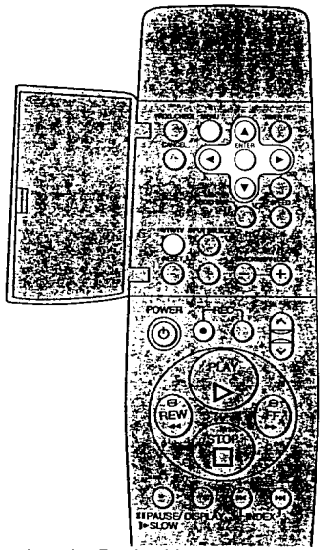
2 Press **VTR/TV** (on the remote controller) to select the VTR mode.
• The "VTR" indicator appears on the VTR Display.

3 Select channels on the VTR that you would normally receive clearly in your area to check proper reception.

Language Setting of On Screen Display

Preparation

- Confirm that the TV is on and the VTR viewing channel is selected.
- Turn on the VTR.
- Press **VTR/TV** to select the VTR mode.



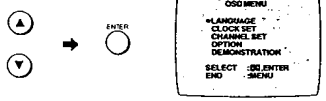
To select the Desired Language

Select one of the four languages displayed: English, Spanish, Portuguese and French.

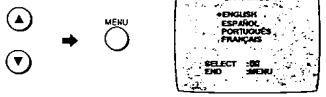
1 Press **MENU**.

2 Select **LANGUAGE**.

On Screen Display



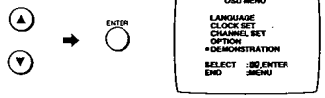
3 Select the desired language.



To View a Demonstration

1 Press **MENU**.

2 Select **DEMONSTRATION**.



- During Demonstration mode, all the On Screen Displays are displayed one after the other at about five second intervals.

3 Press **MENU** to stop the Demonstration.

Note:
The Menu Screen has a blue background. However, if there is no signal during external input, the Menu Screen may change to black and white if **MENU** is pressed. This does not indicate a malfunction.
If this happens, either input a signal during external input or switch to Tuner input.

Setting the Clock of the VTR

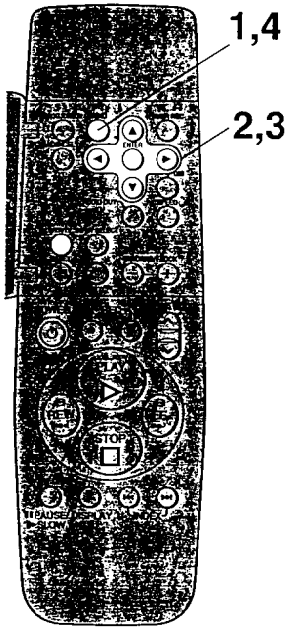
The built-in clock is used to activate the timer for automatic recording and must be set to the correct time.

The built-in digital clock employs the **24-hour system**.

For Example:
Date; 16th, October, 1999
Time; 20:15

Preparation

- Confirm that the TV is on and the VTR viewing channel is selected.
- Turn on the VTR.
- Press **VTR/TV** to select the VTR mode.



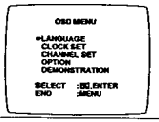
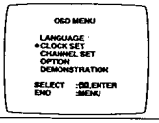
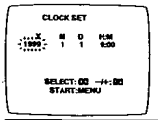
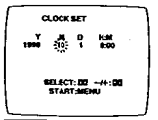
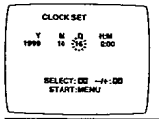
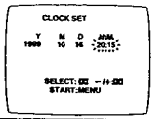
Time Reset Function

If the clock is less than two minutes slow or fast, it can easily be reset to the proper time.

For example:
Resetting the clock to 12:00.00.

1 Select **CLOCK SET** on **MENU** On Screen Display and press **ENTER**.

2 When the current clock display on the VTR is between 11:58 to 12:01, press **MENU** as soon as you hear the 12:00.00 time signal. This resets the time to 12:00.00.

Operations	On Screen Display	
1		Press **MENU**.
2		Select **CLOCK SET**.
3 Set each item by pressing ▲ or ▼ and ►. Press ◄ to return to the previous item.		
▲		Set **Year** "1999".
▼		Set **Month** "10".
►		Set **Date** "16".
		Set **Time** "20:15". • When it is kept pressed, the indication changes in 30-minute steps. • There is no need to press ►.
4	Display Symbol	Press **MENU**. • The clock will start.

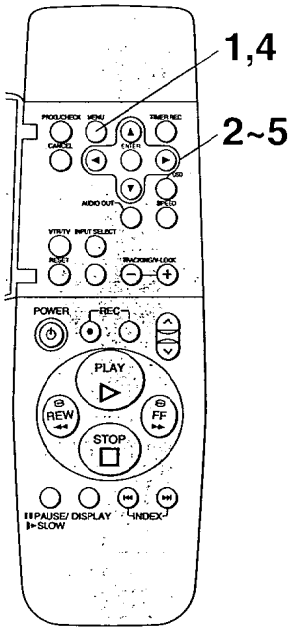
Note:
The clock operates for at least 1 year by its backup system in the event of power failure.

Storing TV Broadcasts into your VTR

Introduction
The VTR has its own tuner (just like a normal TV set) and can receive up to 181 TV broadcast stations.

Preparation
- Confirm that the TV is on and the VTR viewing channel is selected.
- Turn on the VTR and select any channel except A1 or A2.
- Press **VTR/TV** to select the VTR mode.

Auto Tuning procedure

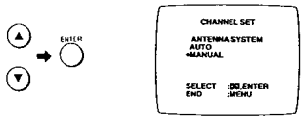


Operations	On Screen Display	
1 MENU	OSD MENU •LANGUAGE CLOCK SET CHANNEL SET OPTION DEMONSTRATION SELECT :▲▼,ENTER END :MENU	Press **MENU**.
2 ▲▼ ENTER	OSD MENU LANGUAGE CLOCK SET •CHANNEL SET OPTION DEMONSTRATION SELECT :▲▼,ENTER END :MENU	Select **CHANNEL SET**.
3 ▲▼ ENTER	CHANNEL SET •ANTENNA SYSTEM AUTO MANUAL SELECT :▲▼,ENTER END :MENU	Select **ANTENNA SYSTEM**.
4 ▲▼ MENU	ANTENNA SYSTEM •TV CATV SELECT :▲▼ END :MENU	Select the desired system.
5 ▲▼	CHANNEL SET ANTENNA SYSTEM •AUTO MANUAL SELECT :▲▼,ENTER END :MENU	Select **AUTO** and press **ENTER**. • When Auto Tuning is finished, the On Screen Display disappears and the lowest channel position at which a broadcast can be tuned in is received.
ENTER	AUTO CHANNEL SET 2 PROCEEDING END :MENU	

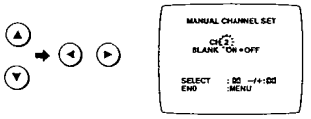
Notes:
- Auto Tuning searches for TV stations from VHF minimum to UHF maximum and memorizes which channel numbers actually receive a station. Channel numbers with no reception are skipped.
- Auto Tuning takes seven or more minutes to complete the search.
- If VTR is not correctly tuned by Auto Tuning, follow the procedure on next page.

Manual System Setting Procedure
Follow steps 1 to 4 of the above procedure.

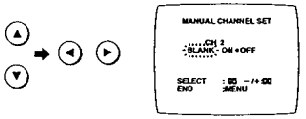
5 Select **MANUAL** by pressing ▲ or ▼ and then press **ENTER**.



6 Select **CH** by pressing ▲ or ▼ and then select the program position by pressing ◄ or ►.



7 Select **BLANK** by pressing ▲ or ▼ and then select OFF by pressing ◄ or ►.



- To select the blanking of a program position, select **ON**. When blanking is on for any program position, that channel number will be skipped when changing channels using the ∨ or ∧ key's.
- Repeat steps 6 and 7 for another unoccupied program positions to skip during the selection of the program positions.

8 Press **MENU** three times.

Channel Plan
TV mode

CHANNEL DESIGNATIONS	CHANNEL RECEIVED OFF THE AIR	CHANNEL SELECTION & INDICATION ON VTR
VHF	2–13	2–13
UHF	14–69	14–69

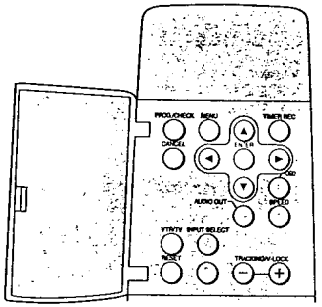
CATV mode

CHANNEL DESIGNATIONS	CATV CHANNEL RECEIVED FROM CABLE	CHANNEL SELECTION & INDICATION ON VTR
BROADCAST VHF	2–13	2–13
CATV LOW BAND	A-5–A-1	95–99
CATV MID/ SUPER BANDS	A–W	14–36
CATV HYPER BAND	AA–FFF	37–65
ULTRA BAND	GGG–WWW WWW+1– WWW+12	66–94
	100–125	100–125
SPECIAL CATV CHANNEL	5A	1

Settings Using On Screen Display

Preparation

- Confirm that the TV is on and the VTR viewing channel is selected.
- Turn on the VTR.
- Press **VTR/TV** to select the VTR mode.

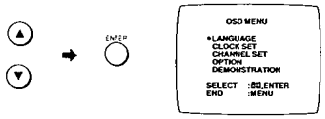


To select Cassette Tape Length for displaying the Approximate Remaining Tape Time

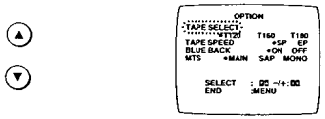
1 Press **MENU**.

2 Select **OPTION**.

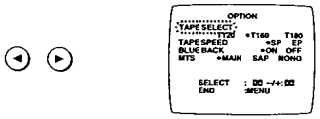
On Screen Display



3 Select **TAPE SELECT**.



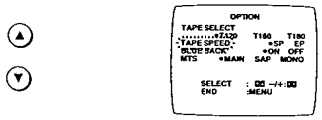
4 Select the corresponding cassette tape length.



T120: For T30, -60, -90 and -120 tapes.
T160: For T140 and -160 tapes.
T180: For T180 tape.

To select the Desired Tape Speed for Manual Recording

1 Select **TAPE SPEED** on **OPTION** On Screen Display.



2 Select the desired tape speed.

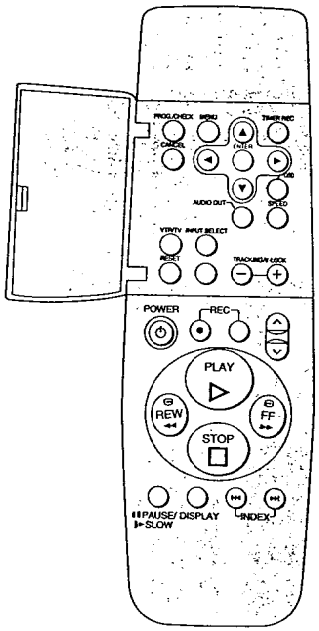
For Blue Background Function

When **BLUE BACK** is **ON**, the screen will always have a blue background when no signal is received or the received signal is very weak during Tuner input.

1 Select **BLUE BACK** on **OPTION** On Screen Display.

2 Select **ON**.

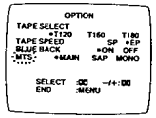
- When **BLUE BACK** is **OFF**, the blue background function does not work.
- It is not possible to record the blue picture of the blue background function.



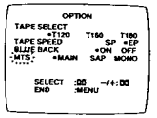
Audio Channel Selection

When a stereo and/or Audio II (SAP) broadcast is received, "STEREO" and/or "SAP" are lit to inform you of the type of broadcast.

1 Select **MTS**.



2 Select the desired mode.



The table below shows the TV broadcast type, **MTS** settings, and audio recording patterns.

Be sure that MTS is set to MAIN or SAP and follow the operation procedure described on page 20 to record on the Hi-Fi audio tracks.

TV Broadcast	MTS	Audio Track		
		Normal (Mono)	Hi-Fi	
			Left	Right
Mono	MAIN or SAP	Mono	Mono	Mono
Stereo	MAIN or SAP	L+R (Mixed)	Left	Right
Mono and Audio II (SAP)	MAIN	Mono	Mono	Mono
	SAP	Mono	Mono	Audio II
Stereo and Audio II (SAP)	MAIN	L+R (Mixed)	Left	Right
	SAP	L+R (Mixed)	L+R (Mixed)	Audio II

MONO Position

If the sound of a stereo or Audio II (SAP) broadcast is impaired by noise due to weak reception, set **MTS** to MONO. The TV broadcast is recorded monaurally for easier listening.

To resume stereophonic recording, set **MTS** to MAIN or SAP.

After All Settings are selected

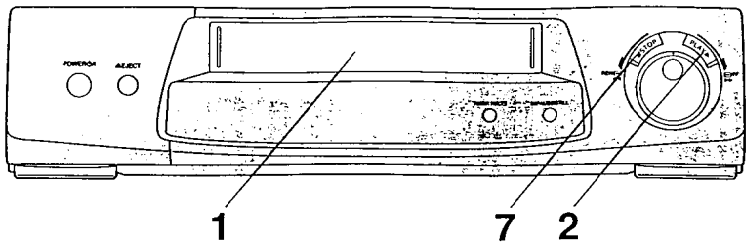
Press **MENU** twice to make On Screen Display disappear.

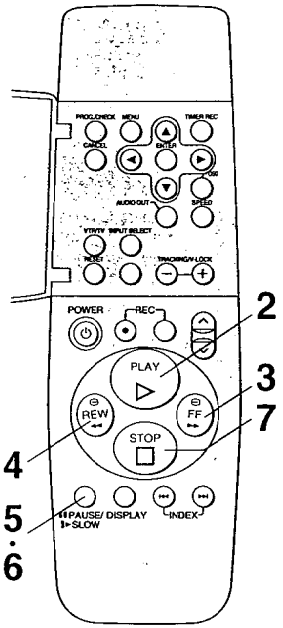
Auto Bilingual Choice Function

When a stereo broadcast or Audio II (SAP) broadcast is recorded and played back on this unit, stereo sound will be automatically selected in the case of a stereo broadcast and Audio II (SAP) sound will be automatically selected in the case of a dual-sound broadcast (Mono and Audio II or Stereo and Audio II).

- The wrong choice may be made if the program is played back from an interim point. (In a case like this, press the **AUDIO OUT** button and select the right sound.)
- This function works only for cassettes which have been recorded by a video recorder equipped with Panasonic's Auto Bilingual Choice function.
- The function will not work with a cassette which has been recorded using the external input facility.

Playback





Operations	Display Symbols	
1		Insert a recorded cassette tape.
2 PLAY		Start viewing the picture.
3 FF		Search forward by pressing **FF**. ●To change back to normal playback, press **PLAY**. Keep **FF** pressed to search and release it to return to normal playback.
4 REW		Search backward by pressing **REW**. ●To change back to normal playback, press **PLAY**. Keep **REW** pressed to search and release it to return to normal playback.
5 PAUSE/ SLOW		View a still picture. ●Press **PAUSE/SLOW**. ●To continue the normal playback, press **PLAY** or **PAUSE/SLOW**.
6 PAUSE/ SLOW		View the slow motion picture. ●Keep **PAUSE/SLOW** pressed for more than 2 seconds. ●To resume the normal playback, press **PLAY**.
7 STOP		Stop viewing the picture.

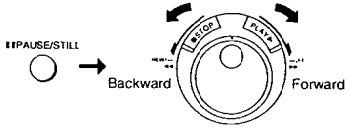
Other Playback Functions

To change the playback speed

Using Shuttle Ring:

1 Press **PAUSE/STILL**.

2 Rotate Shuttle Ring.

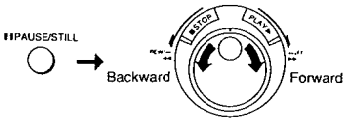


To locate the desired picture exactly

Using Jog Dial:

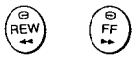
1 Press **PAUSE/STILL**.

2 Turn Jog Dial.



To obtain High Speed Picture during Fast Forward or Rewind

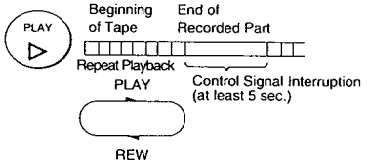
Keep **FF** pressed during fast forward.
Keep **REW** pressed during rewind.



●The same operation can also be performed by turning the Shuttle Ring.

To playback the Recorded Part Repeatedly

Keep **PLAY** pressed for more than 5 seconds.
This causes the tape to repeatedly play from the beginning up to the end of the recorded position.



●"R ▶" appears on the On Screen Display.
●Press **POWER** to release from Repeat Playback mode.
●Repeat playback is not possible for tapes with an unrecorded part lasting 1 or more seconds at the beginning of the tape.

To find the Beginning of Each Recording

For example:
Searching for the 2nd recorded segment in the forward direction.

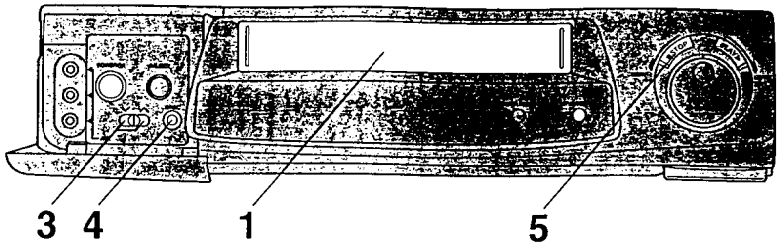
Press **INDEX** ▶▶I twice.

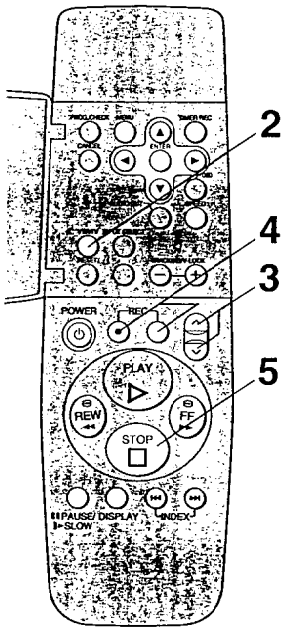
●After finding the specific recorded segment, playback starts automatically.
●For the reverse direction, press **INDEX** I◀◀.
●Up to 20 index signals can be searched for in both directions.
●When the opposite **INDEX** button is pressed, the number will be decreased till 1.
●The figure on the display is decrementec by 1 each time an index signal is located.

Recording Index Signals
Index signals are recorded in following cases.
●When a recording is started by pressing **REC**.
●When **REC** is pressed during recording.
●When timer recording is activated.

Notes:
●Audio reproduction of linear (conventionally recorded) tapes will be monaural when played back on the FM Hi-Fi video recorders.
●Cue, review or slow playback will be automatically released after 10 minutes, and still playback after 5 minutes.
●The INDEX search function can only work correctly, if the index signals are spaced at least 3 minutes apart in the SP mode and 5 minutes apart in the EP mode.
●In EP mode only:
When playing back a tape which was recorded on another VTR, it may be necessary to adjust the Tracking Control. In some cases the picture quality may still be inferior. This is due to limitation of format.

Manual Recording





Operations	Display Symbols	
1		Insert a cassette tape. ●If it has already been inserted, press **POWER** to turn the VTR on.
2 VTR/TV	VTR	Select the VTR mode.
3		Select TV station.
4 REC		Start recording.
5 STOP		Stop recording.

To select the Desired Tape Speed

Press **SPEED** before recording.

SPEED → SP

To interrupt Recording

Press **PAUSE/SLOW** during recording.
Press again to continue recording.

❚❚PAUSE/ I► SLOW

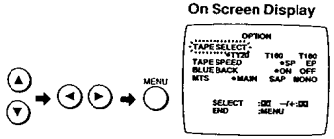
To record One TV Program while viewing Another Program

1 Refer to the manual recording operations steps 1 to 4.
2 Press **VTR/TV** to select the TV mode.
3 Select the TV program on your TV set you wish to view at the present time.

To display the Approximate Remaining Tape Time

1 Select **TAPE SELECT** on OPTION On Screen Display and select the corresponding cassette tape length. See page 16.

On Screen Display



T120: For T30, -60, -90 and -120 tapes.
T160: For T140 and -160 tapes.
T180: For T180 tape.

2 Press **DISPLAY**.

DISPLAY → REMAIN 1:05

→Clock→Counter→**Remaining Tape Time**

●The remaining tape time may not be displayed correctly depending on the tape used.

Notes:
●When a video cassette with a broken off tab is inserted, the "VCR" indication will flash to indicate that recording is not possible.
●The recording pause mode will be automatically released after 5 minutes, and return to stop mode.

Timer Recording

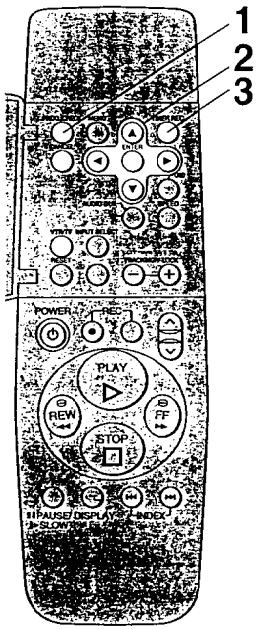
Up to 8 timer programs can be recorded up to one month in advance by setting the timer, including daily and weekly programs.

Preparation

- Confirm that the TV is on and the VTR viewing channel is selected.
- Insert a cassette tape with an intact erasure prevention tab.
- Press **VTR/TV** to select the VTR mode.

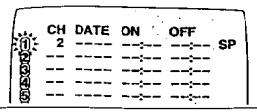
For Example:

Timer program number;	1
Program position (channel);	2
Date;	27th, October
Starting time;	20:02
Ending time;	21:30
(Present date; 16th, October)	



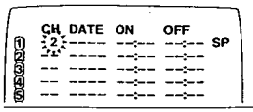
Operations **On Screen Display**

1

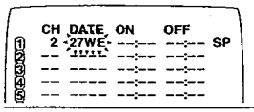


Select **Timer Program number** "1" by pressing **PROG./CHECK**, and then press ▶.

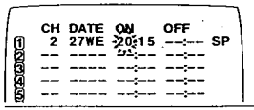
2 Set each item by pressing ▲ or ▼ and ▶. Press ◀ to return to the previous item.



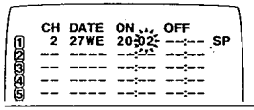
Set **Program position** (channel) "2".



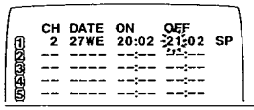
Set **Date** "27".
- For daily and weekly recording, see page 23.



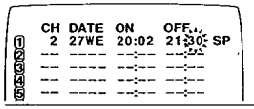
Set **Starting time** (hour) "20".



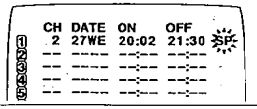
Set **Starting time** (minute) "02".



Set **Ending time** (hour) "21".



Set **Ending time** (minute) "30".



Select **Tape speed.**
- There is no need to press ▶.

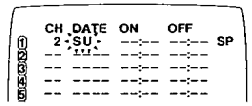
3

To activate timer recording, press **TIMER REC.**

Setting for Weekly and Daily Timer Recording

In the Date setting step, press ▼ repeatedly until the desired day(days) is displayed.
(SU=Sunday, MO=Monday, TU=Tuesday, WE=Wednesday, TH=Thursday, FR=Friday, SA=Saturday)

Weekly recording
For example, Sunday



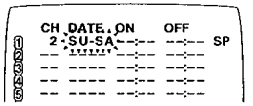
Daily recording
For this timer function, several groups of days can be selected.

Ⓐ Daily recording from Monday to Friday

Ⓑ Daily recording from Monday to Saturday

Ⓒ Daily recording from Sunday to Saturday

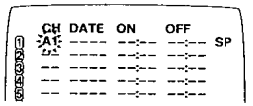
For example, Ⓒ



Timer Recording from External Signal Source

If Timer Recording is performed by a unit connected to the Audio/Video input sockets, select the A1 or A2 indicator for the program position.

A1: Through the AV1 (AUDIO IN/VIDEO IN) socket.
A2: Through the AV2 (AUDIO IN/VIDEO IN) sockets on front panel.



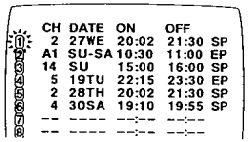
Setting other Programs in Succession

Repeat steps 1 and 2.

Checking a Timer Program

- The VTR must be turned on, or the timer recording indicator "⏲" must be lit.
- Confirm that the TV is on and the VTR viewing channel is selected.

1 Press **PROG./CHECK**.

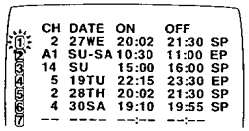


2 Press **VTR/TV** to select the VTR mode.

Cancelling a Timer Program

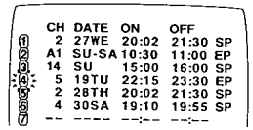
- The VTR must be turned on, or the timer recording indicator "⏲" must be lit.
- Confirm that the TV is on and the VTR viewing channel is selected.

1 Press **PROG./CHECK**.

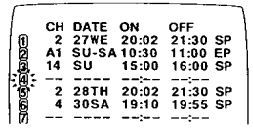


2 Press **VTR/TV** to select the VTR mode.

3 Press **PROG./CHECK** repeatedly until the desired timer program number is flashing on and off.



4 Press **CANCEL**.



Note:
If a timer recording is not performed to the end (due to insufficient tape or cancellation by the user), the programmed timer recording data will be cancelled from the memory by 4 a.m. two days later.
However, if the Timer Record Function is activated at that time, the programed timer recording data will be cancelled at 4 a.m. the next day.

Editing

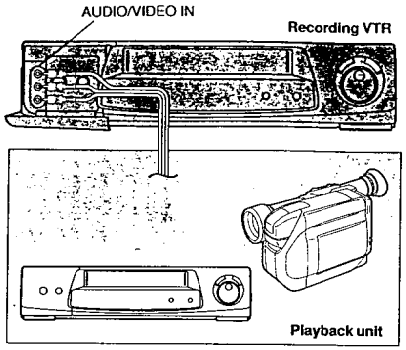
Assembly Editing

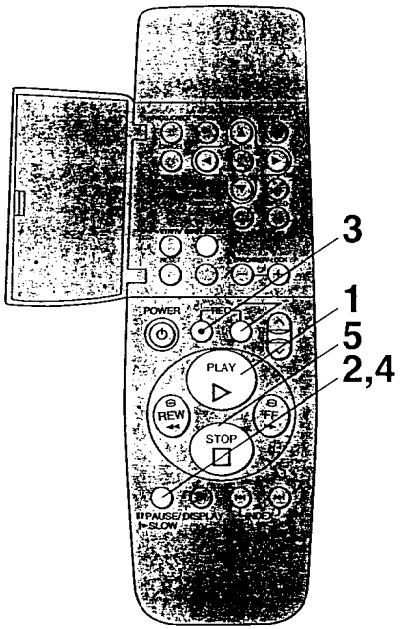
This function can be used to make up an edited tape from other recordings or video sources.

A new scene can be added to the end of a previous one.

Preparation

- Connect a video camera or another VTR to this VTR as shown.
- Insert a recorded cassette tape with an intact erasure prevention tab.
- Select the video source required by pressing **INPUT SELECT** to set A2.





Operations

1 Search for the end of the previous recording.

PLAY ▷

2 Press **PAUSE/SLOW**.

❚❚PAUSE/ I► SLOW

3 Press **REC** to switch the VTR from the pause mode to the recording standby mode.

REC

4 Start the new recording by pressing **PAUSE/SLOW** again.

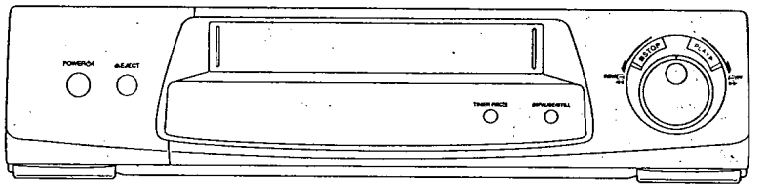
❚❚PAUSE/ I► SLOW

5 Press **STOP** to stop recording.

STOP □

Note:
The new sound will be recorded on both the normal and Hi-Fi sound tracks, only monaural sound recording is possible on the normal sound tracks.

Other Functions



S-VHS Quasi Playback

It is also possible to playback tapes recorded in the S-VHS system.

- Some picture noise may occur depending on the type of tape used.
- It is not possible to fully obtain the high resolution that S-VHS is capable of.
- It is not possible to record in the S-VHS system with this VTR.

Other Automatic Functions

Automatic Playback

When a cassette without an erasure prevention tab is inserted, the VTR starts playback automatically.

VTR-off Playback

When the VTR is off, an inserted cassette can be played back by pressing **PLAY**.

Automatic Rewinding

When the tape reaches its end during recording (except for timer recording) or playback, it will automatically be rewound to the beginning.

Automatic Switching Off and Ejection

When the VTR is switched off, an inserted cassette can be ejected simply by pressing **EJECT**. The VTR will eject the cassette and automatically turn itself off again.

MEMO

SECTION 2
ADJUSTMENT PROCEDURES

2-1. DISASSEMBLY METHOD

2-1-1. DISASSEMBLY FLOW CHART

This flow chart indicates disassembly steps of the cabinet parts and the circuit boards in order to gain access to part for servicing. When reassembling, perform the steps in the reverse order.

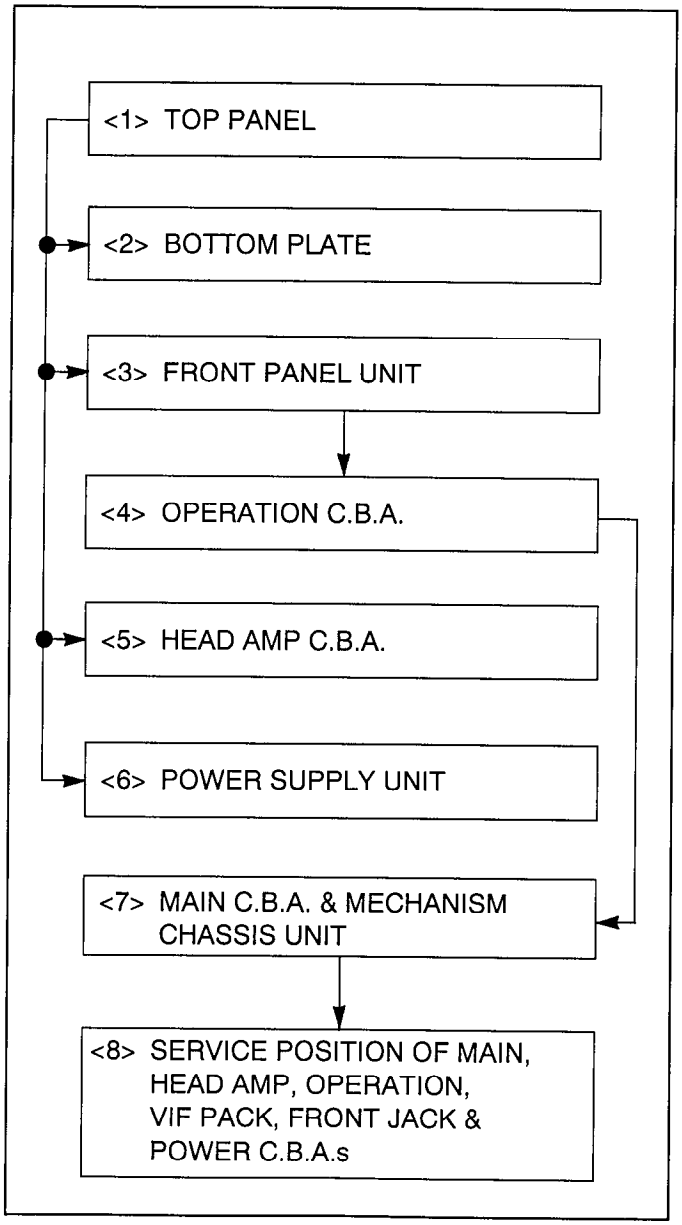

<1> TOP PANEL
<2> BOTTOM PLATE
<3> FRONT PANEL UNIT
<4> OPERATION C.B.A.
<5> HEAD AMP C.B.A.
<6> POWER SUPPLY UNIT
<7> MAIN C.B.A. & MECHANISM CHASSIS UNIT
<8> SERVICE POSITION OF MAIN, HEAD AMP, OPERATION, VIF PACK, FRONT JACK & POWER C.B.A.s

Fig. D1

<1> REMOVAL OF THE TOP PANEL

Remove ..... 2 Screws (A)

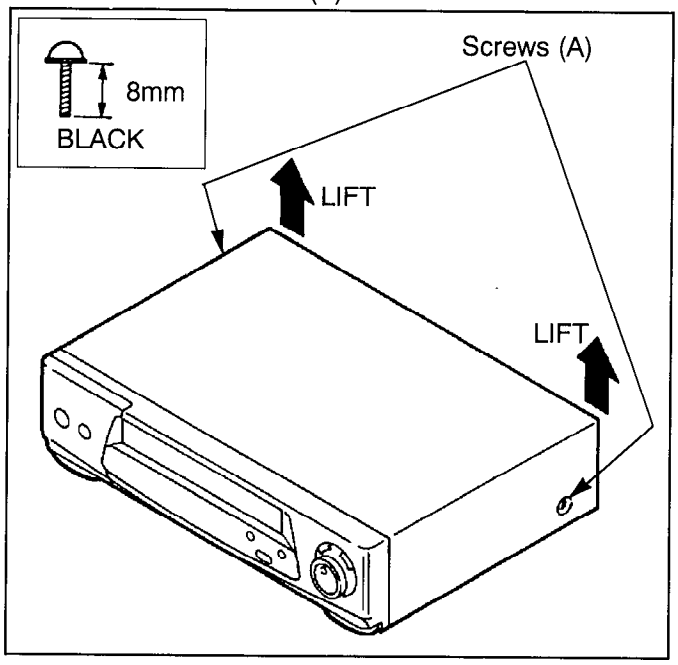


Fig. D2

<2> REMOVAL OF THE BOTTOM PLATE

Unlock..... 6 Tabs (B)

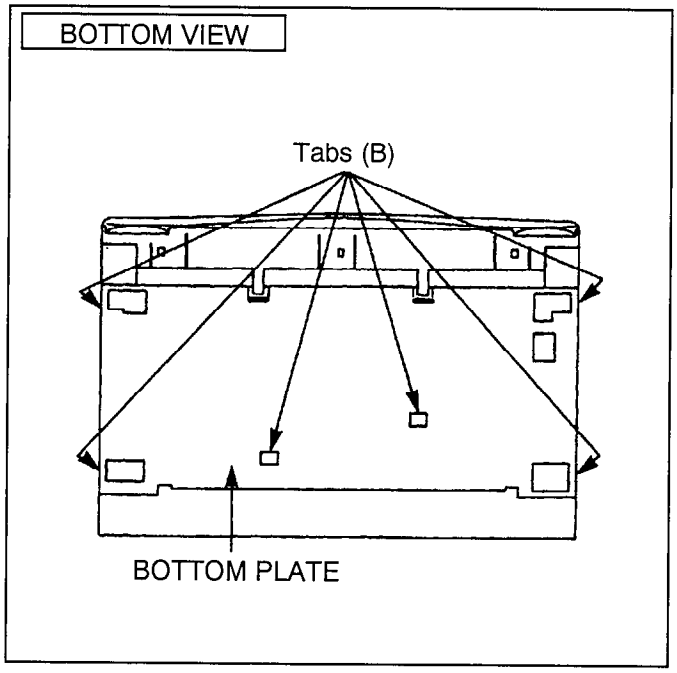


Fig. D3

<3> REMOVAL OF THE FRONT PANEL UNIT

Remove ..... SHUTTLE RING and JOG DIAL (C)
Unlock..... 9 Tabs (D)

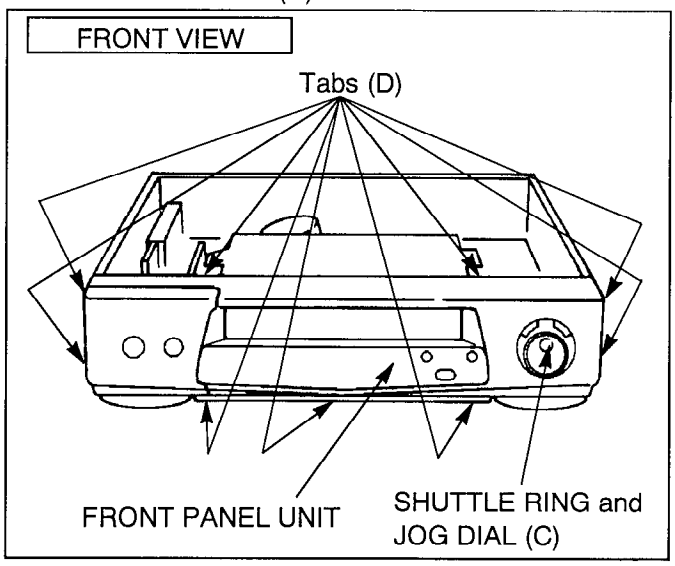


Fig. D4

<4> REMOVAL OF THE OPERATION C.B.A.

Disconnect ..... Connector P7901 (E)
Unlock..... 2 Tabs (F)

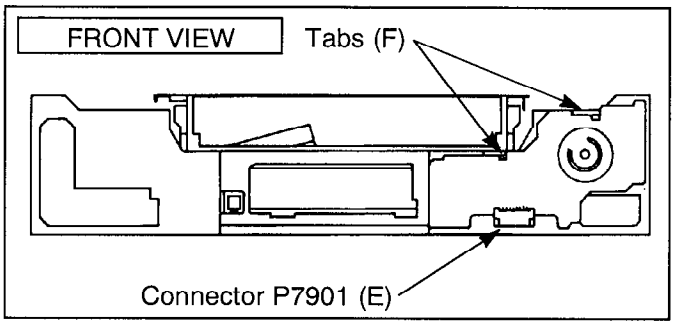


Fig. D5

<5> REMOVAL OF THE HEAD AMP C.B.A.

Remove ..... Holder (G)
Remove ..... Screw (H)
Disconnect ..... 3 Connectors (I) (P501, P502, P504)

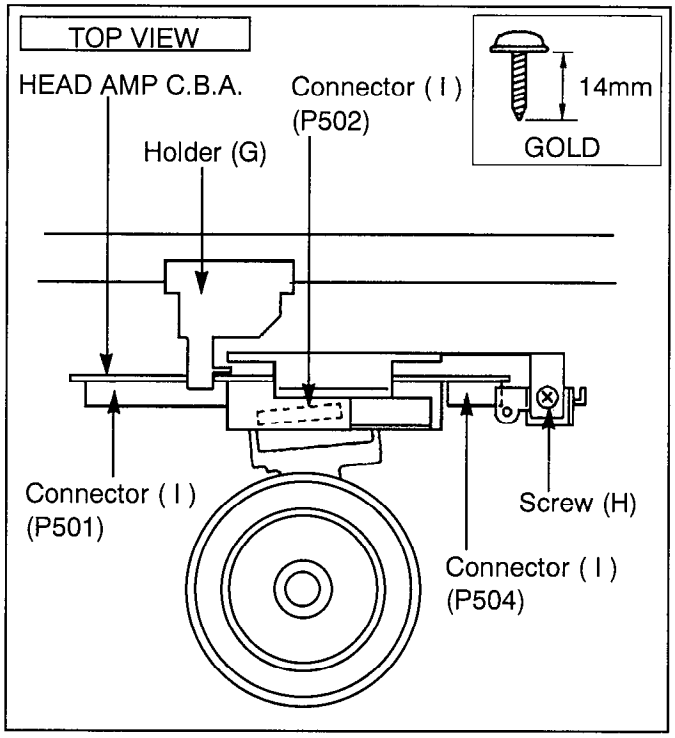


Fig. D6

<6> REMOVAL OF THE POWER SUPPLY UNIT

Unlock..... 3 Tabs (J)
Unlock..... 2 Tabs (K)
Disconnect ..... Bridge connector (L)

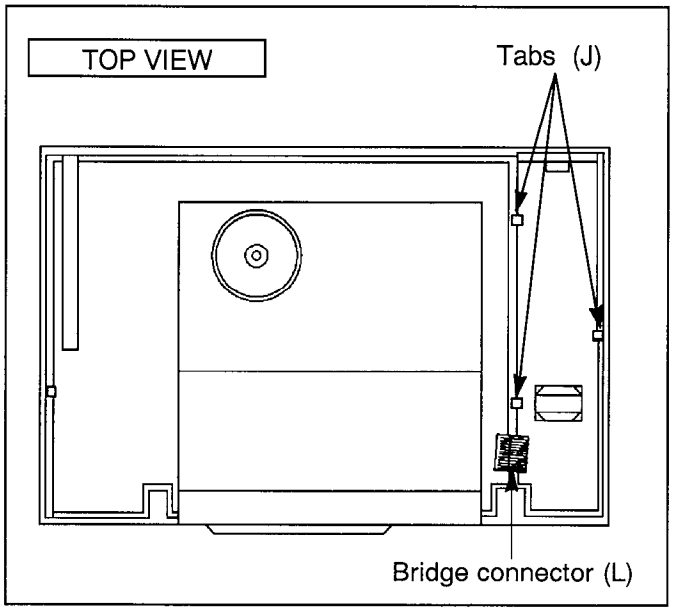


Fig. D7-1

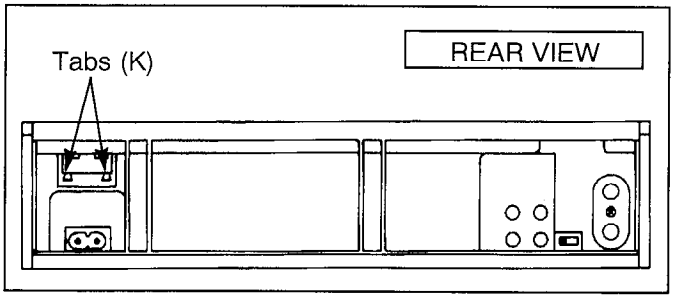


Fig. D7-2

<7> REMOVAL OF THE MAIN C.B.A. & MECHANISM CHASSIS UNIT

MECHANISM UNIT
Remove ..... 3 Screws (M)
Remove ..... Screw (N)

MAIN C.B.A.
Remove ..... Screw (O)
Unlock..... 2 Tabs (P)

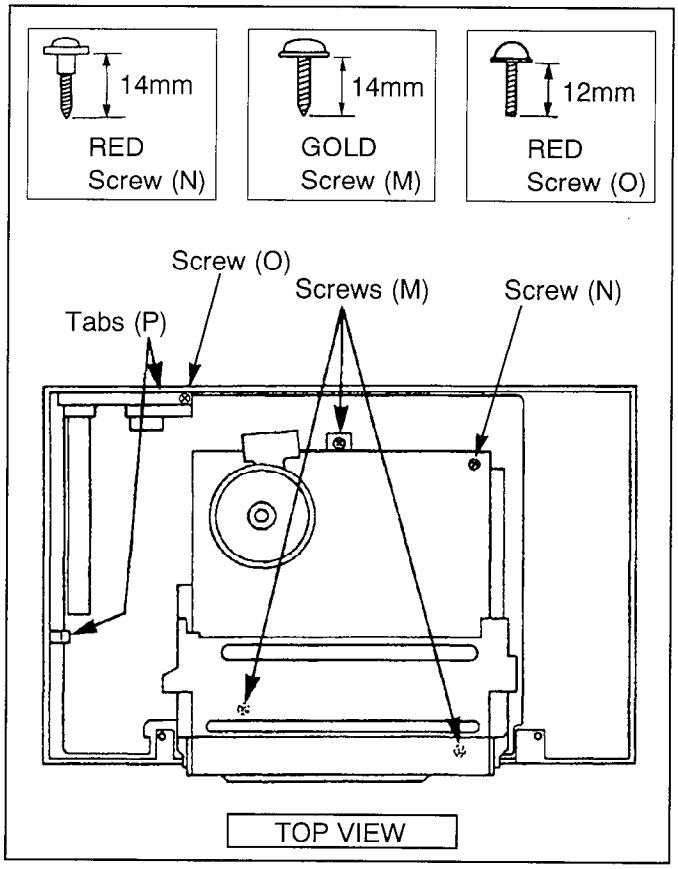


Fig. D8

<8> SERVICE POSITION OF MAIN, HEAD AMP, OPERATION,VIF PACK, FRONT JACK & POWER C.B.A.s

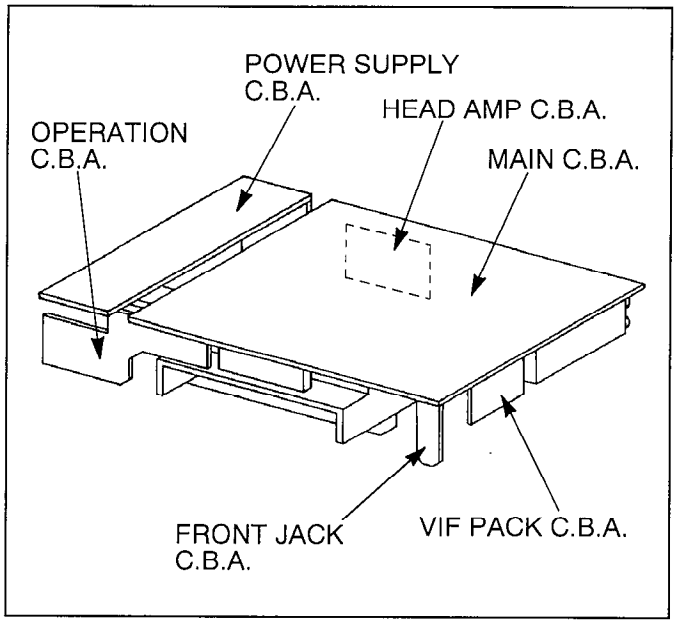


Fig. D9

2-2. MECHANICAL ADJUSTMENT PROCEDURES

Refer to the K-Mechanism Service Manual (Order No.:VSD9401M242).

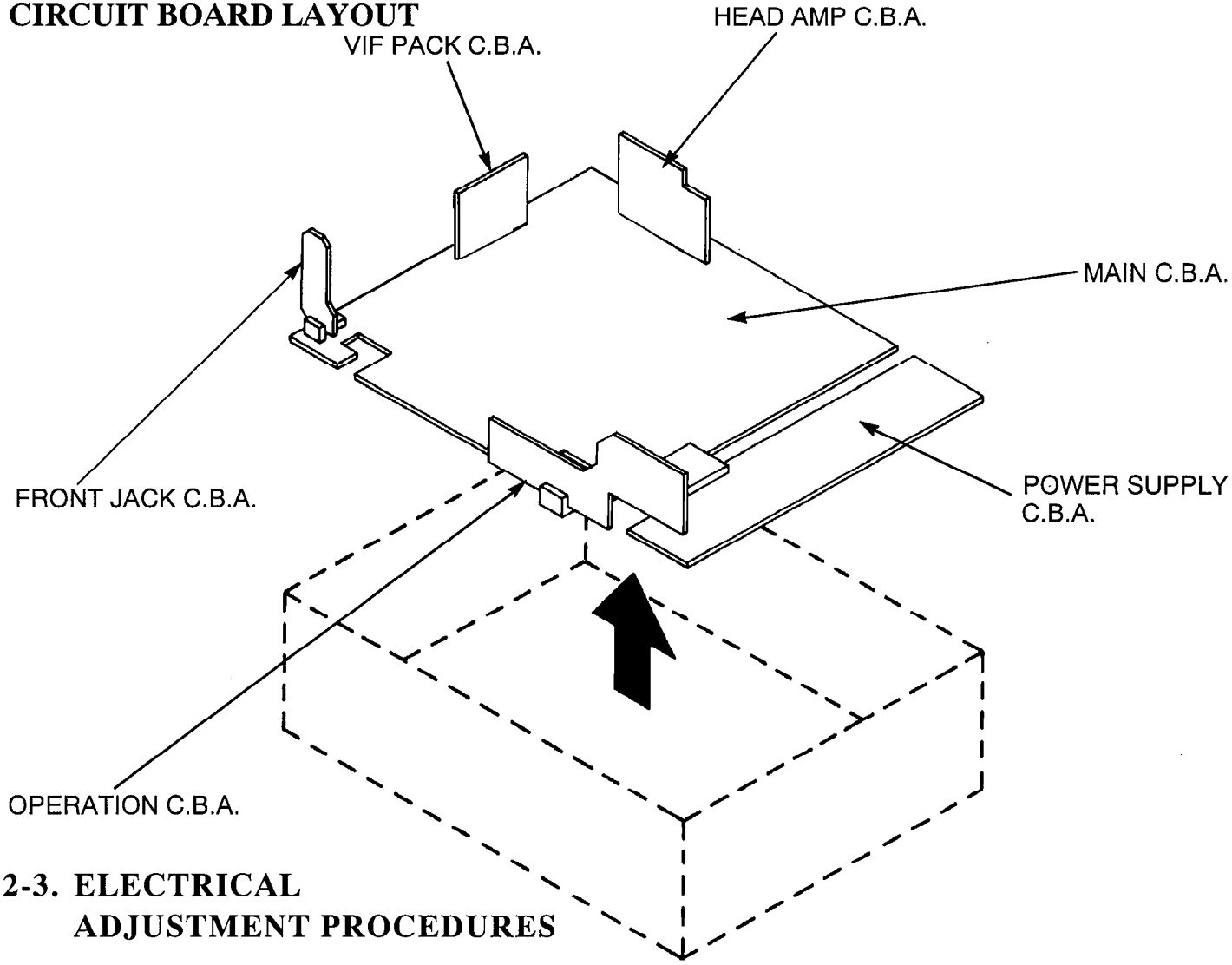
CAUTIONS:

To make the Adjustment Mode for Tape Interchangeability, Press the FF and EJECT buttons simultaneously 3 times to set the service mode 2. After finishing the adjustment, release the Service mode 2.

[TEST POINT]

Interchangeabilty Adjustment	VIDEO RF SIGNAL	P501-PIN ⑱ (HOT) P501-PIN ⑪ (GND) HEAD AMP C.B.A.
	Head Switching Pulse	TW2001 MAIN C.B.A.

CIRCUIT BOARD LAYOUT



2-3. ELECTRICAL ADJUSTMENT PROCEDURES

To perform electrical adjustments following equipment is required.

VHS Alignment Tape. (NTSC : VFM8080HQFP)

SERVO SECTION

2-3-1. PG SHIFTER ADJUSTMENT

PROCEDURES	DISPLAY
1. To set Service Mode 2, press FF and EJECT buttons simultaneously three times.	
2. Press EJECT button for more than three seconds. Digit of minute is put out light.	
3. Indicate 1 in the digit of minute by pressing the channel up/ down buttons. When the channel up button is pressed, 1 will be indicated in the digit of minute.	
4. Insert VHS Alignment Tape. (NTSC : VFM8080HQFP)	
5. This adjustment is automatically started after VCR goes PLAY mode. (During the adjustment, the picture can be observed on the monitor.)	
6. When this adjustment is terminated, the following operation will be activated. Adjustment completed : The tape will be ejected. Adjustment incompleted : Indicates " F20 " Check the Servo/System Control circuit and Cylinder unit.	
7. To release Service Mode 2, press FF and EJECT buttons simultaneously sixth times or turn off the power.	

Fig.E1

SECTION 3
BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS

3-1. ABBREVIATIONS

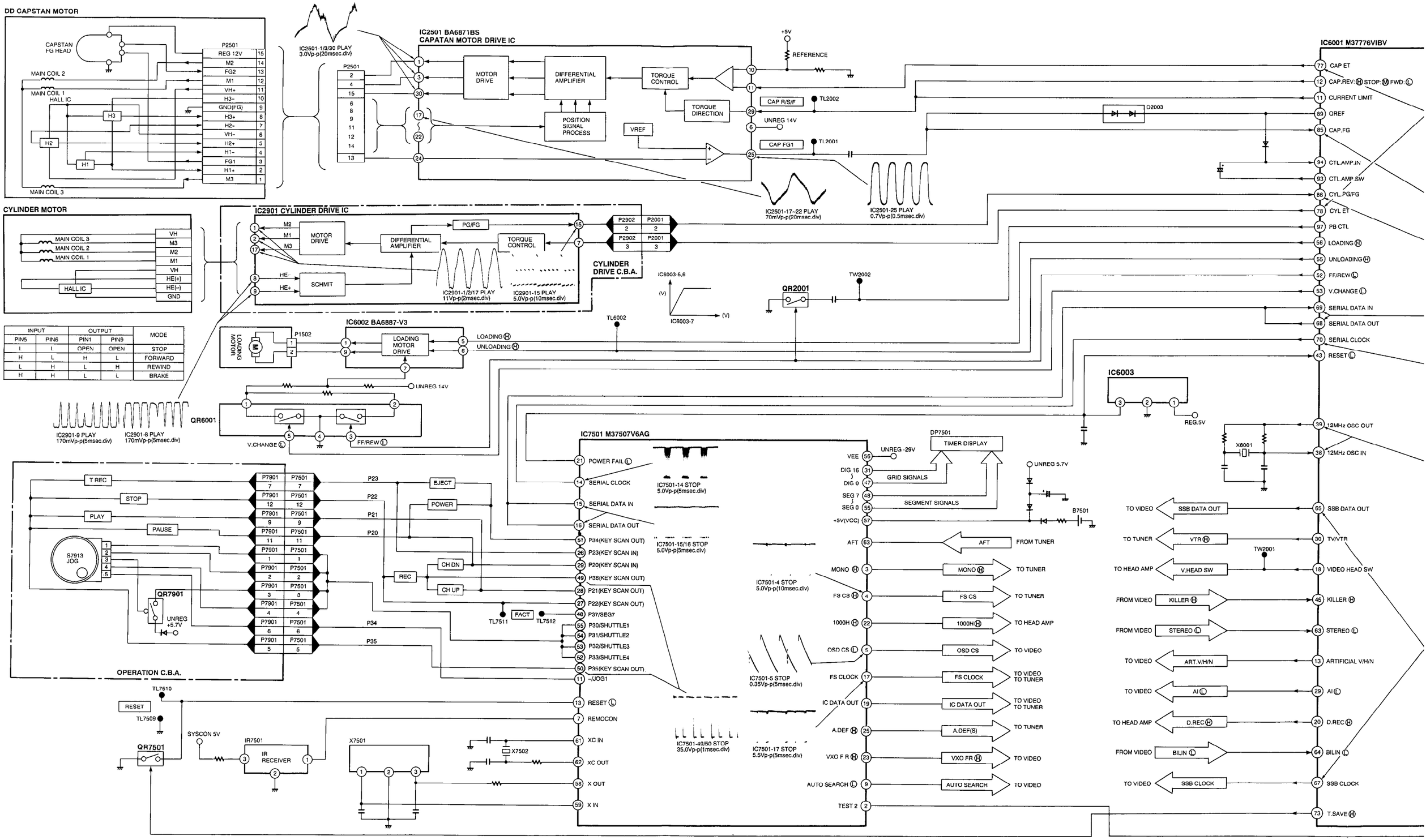
443NT [L]	4.43 NTSC Ⓛ	BIL. [H]	BILINGUAL Ⓗ
A. COMP	AUDIO COMPONENT SIGNAL	BIL/M1[L]	BILINGUAL Ⓛ
A. COMPO	AUDIO COMPONENT SIGNAL	BS CLOCK	BS CLOCK
A. D.P [L]	AUDIO DUBBING PAUSE Ⓛ	BS DATA	BS DATA
A. D/L [L]	AUDIO DUBBING PAUSE Ⓛ	BS LCH IN	BS L CHANNEL INPUT
A. DEF [S]	AUDIO DEFEAT	BS MIX [H]	BS MIX Ⓗ
A.DEF [S] [L]	AUDIO DEFEAT	BS MON [H]	BS MONITOR Ⓗ
A. DUB P [L]	AUDIO DUBBING PAUSE Ⓛ	BS MONI [H]	BS MONITOR Ⓗ
A. DUB [H]	AUDIO DUBBING Ⓗ	BS RCH IN	BS R CHANNEL INPUT
A. ERASE	AUDIO ERASE	BS VIDEO	BS VIDEO SIGNAL
A. H. SW	AUDIO HEAD SWITCHING PULSE	BS VIDEO/BS1	BS VIDEO SIGNAL
A. HEAD [R]	AUDIO HEAD (REC)	BS [H]	BS Ⓗ
A. HEAD [W]	AUDIO HEAD (PLAY)	BS. LEVEL	BS LEVEL
A. IN [L]	AUDIO INPUT (L)	BS. M [H]	BS MONITOR Ⓗ
A. IN [R]	AUDIO INPUT (R)	BS/VTR [H]	BS/VTR Ⓗ
A. MUT [H]	AUDIO MUTE Ⓗ	BUS CLK	BUS CLOCK
A. MUTE [H]	AUDIO MUTE Ⓗ	BUS LSN	BUS LISTEN
A. OUT [L]	AUDIO OUTPUT (L)	BUS TLK	BUS TALK
A. OUT [R]	AUDIO OUTPUT (R)	BUZZER	BUZZER
A. RF OUT	AUDIO RF SIGNAL OUTPUT	CAP EC	CAPSTAN TORQUE CONTROL
A/VS/S. DATA	AV SW/SERIAL DATA	CAP M GND	CAPSTAN MOTOR GND
AC ONLINE	AC ONLINE	CAP. ET	CAPSTAN TORQUE CONTROL
AC. O/EE. H	AC ONLINE/EE Ⓗ	CAP. FG1	CAPSTAN FG1 PULSE
AFC S C	AFC S CURVE	CAP. FG2	CAPSTAN FG2 PULSE
AFC [S]	AFC S CURVE	CAS. SW	CASSETTE SW
AFC. DEF	AFC DEFEAT	CCN	PLAYBACK CONTROL SIGNAL (−)
ARFC OUT	AUDIO RF SIGNAL OUTPUT	CCP	PLAYBACK CONTROL SIGNAL (+)
ART. V	ARTIFICIAL VERTICAL SYNC SIGNAL	CHM	CONTROL SIGNAL (+)
ART. V. MM	ARTIFICIAL VERTICAL SYNC SIGNAL MONO MULTI	CHP	CONTROL SIGNAL (−)
		CINEM [L]	CINEMA Ⓛ
ART. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL Ⓗ / NORMAL	CINEMA [L]	CINEMA Ⓛ
		CINEMA/MIX	CINEMA/MIX
AT. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL	CKL	RATCH LOCK
ATSW/TEST/NOR/SE	TEST/NORMAL/SERVICE	CKS	SHIFT LOCK
AUDIO IN [L]	AUDIO INPUT (L)	CL	CLOCK
AUDIO IN [R]	AUDIO INPUT (R)	CLK	CLOCK
AUDIO OUT [L]	AUDIO OUTPUT (L)	CLK (C.G)	CLOCK
AUDIO OUT [R]	AUDIO OUTPUT (R)	CLOCK. IN	CLOCK INPUT
AUDIO SELECT [H]	AUDIO SELECT Ⓗ	CLP	CLAMP
AUDIO. L	AUDIO (L)	COL/B/W/NOR	COLOUR/BLACK & WHITE/NORMAL
AUDIO. R	AUDIO (R)	COLOR [H]	COLOUR Ⓗ
AV CNT	AV CONTROL	CONV	CONVERTOR
AV CTL	AV CONTROL	CS	CHIP SELECT
AV CTL/S. CLK	AV CONTROL/SERIAL CLOCK	CTL GND	CONTROL GND
AV. C.M.	AV CONTROL MODE	CTL HEAD [+]	CONTROL HEAD (+)
AVCNT/METER. R	AV CONTROL/LEVEL METER(R)	CTL HEAD [−]	CONTROL HEAD (−)
AVSW/METER. L	AV SW/LEVEL METER (L)	CTL[+]	CONTROL HEAD (+)
B MODE. H	B MODE Ⓗ	CTL[−]	CONTROL HEAD (−)
B.G.P	BURST GATE PULSE	CUE BIAS	CUE BIAS
BACKUP 5V	BACK UP 5V	CURRENT LIM	CURRENT LIMITER
BAND. U.E.	BAND U	CYL ET	CYLINDER TORQUE CONTROL
BANDVL. D	BAND VL	CYL GND	CYLINDER GND
BI/MI [L]	BILINGUAL/MIX Ⓛ	D.F.M. REC [H]	DELAYED FM RECORDING Ⓗ
BIL	BILINGUAL	D. FM REC [L]	DELAYED FM RECORDING Ⓛ
BIL [L]	BILINGUAL Ⓛ	D. GND	DIGITAL GND

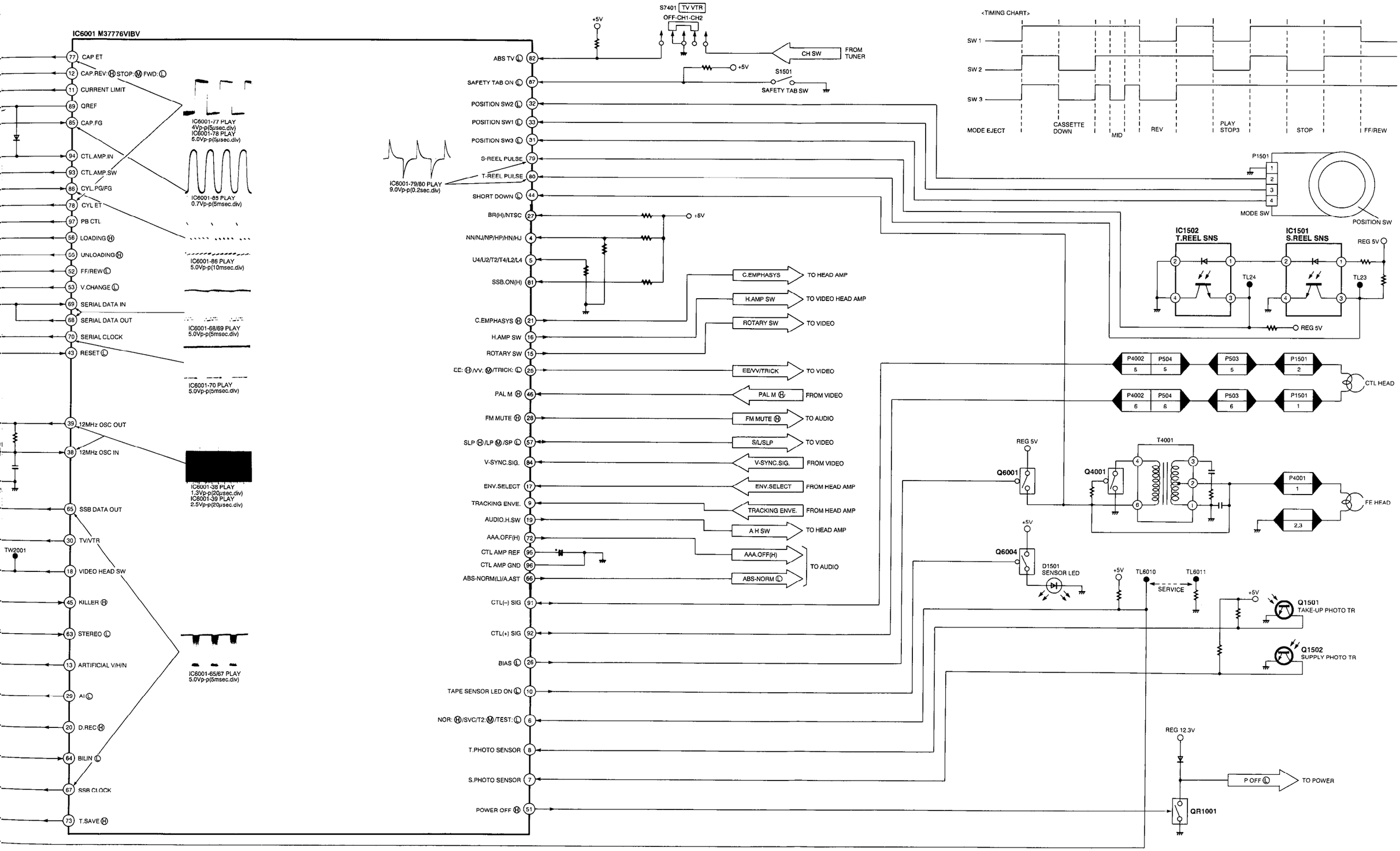
D. REC [H]	DELAYED RECORDING Ⓗ	H.SYNC	HORIZONTAL SYNC
D4/S. LED	D4/STILL LED	H. AMP. SW	HEAD AMP SW PULSE
D4/STILLED	D4/STILL LED	H. P <R>	HEAD PHONE (R)
DAC [CLK]	TUNER DAC (CLOCK)	H. P <L>	HEAD PHONE (L)
DAC/FSCS	TUNER DAC/FS CHIP SELECT	H. P GND	HEAD PHONE GND
DAREC [H]	DELAYED AUDIO RECORDING Ⓗ	H. P OUT [L]	HEAD PHONE OUTPUT (L)
DATA	DATA	H. P OUT [R]	HEAD PHONE OUTPUT (R)
DECODER [L]	DECODER (L)	H. SW	HEAD SW PULSE
DECODER [R]	DECODER (R)	HEAD PHONE [L]	HEAD PHONE (L)
DEW	DEW	HEAD PHONE [R]	HEAD PHONE (R)
DEW SNS	DEW SENSOR	HEAD SW	HEAD SW
DFMRE [H]	DELAYED FM AUDIO RECORDING Ⓗ	HEATER [+]	HEATER (+)
E. REC 5V	EXCEPT RECORDING 5V	HEATER [−]	HEATER (−)
EC	ERROR TORQUE CONTROL	HSS	HORIZONTAL SYNC SIGNAL
ECR	ERROR TORQUE CONTROL	HTR [+]	HEATER (+)
	REFERENCE VOLTAGE	HTR [−]	HEATER (−)
EDT TRIG [L]	EDIT TRIGGER Ⓛ	I RFE	REFERENCE CURRENT
EDIT [H]	EDIT Ⓗ	ICL	CONTROL AGC CIRCUIT
EE [H]	EE Ⓗ	IF	INTERMEDIATE FREQUENCY
EE [H]/INS [M]	EE Ⓗ /INSERT Ⓜ	IN SELA 1	INPUT SELECT A1 POSITION
EE. VV. TR	EE/VV/TRICK PLAY	IN SELA 2	INPUT SELECT A2 POSITION
EJECT. PO	EJECT POSITION	IN SELA 3	INPUT SELECT A3 POSITION
EJECT/VDET	EJECT/REVERSE SLOW LOCK	INS L/R [L]	INSERT Lch/Rch Ⓛ
ENV. SEL	ENVELOPE SELECT	INS. [H]	INSERT Ⓗ
ENVE. OUT	ENVELOPE OUTPUT	INSEL A1	INPUT SELECT A1 POSITION
ENVE. SEL	ENVELOPE SELECT	INSEL A2	INPUT SELECT A2 POSITION
ENV SELECT	ENVELOPE SELECT	INSERT	INSERT
EP [H]	LP Ⓗ	INSERT [H]	INSERT Ⓗ
EP/LP [H]	LP Ⓗ	IO CS	INPUT/OUTPUT CHIP SELECT
EP/ LP/SP	LP/SP	JOG1	JOG1
EP/SS [H]	LP/SLOW/STILL/STOP Ⓗ	JOG S3 LED/FOWRD	JOG LED/FORWARD LED
EPROMCS	EPROM CHIP SELECT	JOG/F. LED	JOG LED/FORWARD LED
EX. REC 5V	EXCEPT RECORDING 5V	JSB [H]	JSB Ⓗ
FF/REW [L]	FAST FORWARD/REWIND Ⓛ	JST. CLCK	JUST CLOCK
FG1 IN	FG1 PULSE INPUT	JST. CLK	JUST CLOCK
FG2 IN	FG2 PULSE INPUT	JST. CLOCK	JUST CLOCK
FILTER ADJ.	FILTER ADJUSTMENT	L. OUT	Lch OUTPUT
FLY ERASE [H]	FLYING ERASE HEAD ON Ⓗ	L. CH [H]	Lch Ⓗ
FLY ON [H]	FLYING ERASE HEAD ON Ⓗ	L. CH [L]	Lch Ⓛ
FLY. E [H]	FLYING ERASE HEAD ON Ⓗ	LED (MAIN)	LED (MAIN)
FM MUT [H]	FM AUDIO MUTE Ⓗ	LED (STEREO)	LED (STEREO)
FM MUTE [H]	FM AUDIO MUTE Ⓗ	LED (SUB)	LED (SUB)
FM OUT [L]	FM OUTPUT (L)	LED CKL	LED SERIAL CLOCK
FM OUT [R]	FM OUTPUT (R)	LED CKS	LED SERIAL CLOCK
FM PACK OUT [L]	FM PACK OUTPUT (L)	LED DATA	LED SERIAL DATA
FM PACK OUT [R]	FM PACK OUTPUT (R)	LINE IN 1 [L]	LINE INPUT 1 (L)
FM/BS SEL [L]	FM/BS SELECT (L)	LINE IN 1 [R]	LINE INPUT 1 (R)
FM/BS SEL [R]	FM/BS SELECT (R)	LINE IN 2 [L]	LINE INPUT 2 (L)
FS. CLK	FS CLOCK	LINE IN 2 [R]	LINE INPUT 2 (R)
FUL. E [H]	FULL ERASE HEAD ON Ⓗ	LINE IN V	LINE INPUT VIDEO
FULL. E [H]	FULL ERASE HEAD ON Ⓗ	LINE IN [L]	LINE INPUT (L)
FULL. E. 12V	FULL ERASE 12V	LINE IN [R]	LINE INPUT (R)
GND [A]	GND (ANALOGUE)	LINE OUT [L]	LINE OUTPUT (L)
GND [TU]	GND (TUNER)	LINE OUT [R]	LINE OUTPUT (R)
GND/N. SW. 12V	GND/NON SW 12V	LP [H]	LP Ⓗ

LPTRI [L]	LP TRICK PLAY Ⓛ	P. OFF [L]	POWER OFF Ⓛ
Lch/A. DUB	Lch/AUDIO DUBBING	PAL [H]	PAL Ⓗ
M GND	MOTOR GND	PAL [L]/NTSC [H]	PALⓁ /NTSC Ⓗ
M REG	MOTOR REGULATOR	PB ADJ. OUT	PLAYBACK ADJUST OUTPUT
MAIN OUT	MAIN OUTPUT	PB OUT	PLAYBACK OUTPUT
MAIN [L]	MAIN Ⓛ	PB. H	PLAYBACK Ⓗ
MAIN/MONO	MAIN/MONAURAL	PFG	PG/FG
MAX IN	MAXIMUM INPUT	PHOTSN + B	PHOTO SENSOR + B
MES [H]	MESECAM Ⓗ	PICT. CNT	PICTURE CONTROL
MESE [H]	MESECAM Ⓗ	PLAY LED/RVS LED	PLAY LED/REVERSE LED
MESE [L]	MESECAM Ⓛ	PLAY. PO	PLAY POSITION
METER 5V	LEVEL METER 5V	PLAY/R.LED	PLAY LED/REVERSE LED
METER [L]	LEVEL METER (L)	PLY/DEW	PLAY/DEW Ⓗ
METER [R]	LEVEL METER (R)	POWER OFF [L]	POWER OFF Ⓛ
METER. L/AVS	LEVEL METER (L)	PREROLL [H]	PREROLL Ⓗ
METER. R/AVC	LEVEL METER (R)	PWRFAIL	POWER FAILURE DETECT
MI/BI [L]	MIX Ⓗ /BILINGUAL	R. CH [H]	Rch Ⓗ
MIC GND	MIC GND	R. CH [L]	Rch Ⓛ
MIC IN	MIC INPUT	R. ST	RESET
MIC IN [L]	MIC INPUT (L)	R/S/F	REVERSE Ⓗ /STOP Ⓜ /FORWARD Ⓛ
MIC IN [R]	MIC INPUT (R)	RCH [H]	Rch Ⓗ
MIC [H]	MIC Ⓗ	REC 12V	RECORDING 12V
MIX [H]	MIX Ⓗ	REC CHROMA	RECORDING CHROMINANCE SIGNAL
MIX [H]/CINEMA [L]	MIX Ⓗ /CINEMA SOUND Ⓛ	REC H	RECORDING Ⓗ
MIX/ CINE	MIX Ⓗ /CINEMA SOUND Ⓛ	REC IN	RECORDING INPUT
MIX/CINEMA [L]	MIX Ⓗ /CINEMA SOUND Ⓛ	REC OUT [L]	RECORDING OUTPUT Ⓛ
MN. H/M. L	MONAURAL Ⓗ /MAIN Ⓛ	REC START	RECORDING START
MN. H/MAI. L	MONAURAL Ⓗ /MAIN Ⓛ	REC VR [C]	RECORDING VOLUME (COMMON)
MN2/MES. L	MONAURAL 2/MESECAM Ⓛ	REC VR [L]	RECORDING VOLUME (L)
MODE SEL	AUDIO MODE SELECT	REC VR [R]	RECORDING VOLUME (R)
MODE SW	AUDIO MODE SW	REC Y	RECORDING LUMINANCE SIGNAL
MODE. S. IN	AUDIO MODE SELECT INPUT	REC [H]	RECORDING Ⓗ
MODE. S. OUT	AUDIO MODE SELECT OUTPUT	REC. C	RECORDING CHROMINANCE SIGNAL
MONO [H]	MONAURAL Ⓗ	REC. Y	RECORDING LUMINANCE SIGNAL
MONO [H]/MAIN [L]	MONAURAL Ⓗ /MAIN Ⓛ	REC/EE CTL	RECORDING/EE CONTROL
MONO2 [L]	MONAURAL 2 Ⓛ	REEL-T	REEL PULSE(TAKE-UP)
MONO2/MESE[FM(L)]	MONAURAL 2/MESECAM(FM Ⓛ)	REEL-S	REEL PULSE (SUPPLY)
MOTOR GND	MOTOR GND	REGULATOR FILTER	REGULATOR FILTER
MUTE	MUTE	RESET	RESET
N. A. REC [L]	NORMAL AUDIO RECORDING Ⓛ	REV M F/R	REVIEW MOTOR FORWARD/REVERSE
N. SW 12V	NON SW 12V		
N. SW. 5. DET	NON SW 5V DETECT	REV M V1	REVIEW MOTOR V1
NICAM	NICAM	REV M V2	REVIEW MOTOR V2
NICAM [L]	NICAM Ⓛ	REV MOTOR F/R	REVIEW MOTOR FORWARD/REVERSE
NOL [H]	PAL Ⓗ /4.43 NTSC Ⓜ /3.58 NTSC Ⓛ		
NOR/SOFT [H]	NORMAL/SOFT TAPE PLAY Ⓗ	REV MOTOR V1	REVIEW MOTOR V1
NORMAL [H]	NORMAL Ⓗ	REV MOTOR V2	REVIEW MOTOR V2
NR BIAS	NR BIAS	REV MOTOR [+]	REVIEW MOTOR (+)
NTSC [L]	NTSC Ⓛ	REV MOTOR [−]	REVIEW MOTOR (−)
OCH	CONTROL AGC CIRCUIT	REV. M. GND	REVIEW MOTOR GND
OUT	OUTPUT	RF.CHROMA	RF CHROMINANCE SIGNAL
P-OFF [H]	POWER OFF Ⓗ	RF OUT	RF OUTPUT
P-OFF [L]	POWER OFF Ⓛ	RF Y	RF LUMINANCE SIGNAL
P. FAIL	POWER FAILURE DETECT	RF. Y. IN	RF LUMINANCE SIGNAL INPUT
P. OFF [H]	POWER OFF Ⓗ	RF. Y. OUT	RF LUMINANCE SIGNAL OUTPUT

ROTAR. SW	ROTARY SW	T. BUSCLK	TIMER BUS CLOCK
ROTARY	ROTARY SW	T. BUSLSN	TIMER BUS LISTEN
RST	RESET	T. BUSTLK	TIMER BUS TALK
RST [L]	RESET Ⓛ	T. END [L]	TAPE END Ⓛ
Rch/INST	Rch/INSERT	T. PHOTO	TAKE-UP PHOTO TRANSISTOR
S IN	SERIAL DATA INPUT	TAPE END [L]	TAPE END Ⓛ
S OUT	SERIAL DATA OUTPUT	TAPE END [L]/CAM	TAPE END Ⓛ /CAMERA PAUSE
S-PHOTO	SUPPLY PHOTO TRANSISTOR	TEST	TEST MODE
S-RL. PLS	SUPPLY REEL PULSE	TPZ	TRAPEZOIDAL WAVE CIRCUIT
S. CLK	SERIAL CLOCK	TRIC [L]	TRICK PLAY Ⓛ
S. CLK/AV	SERIAL CLOCK/AV	TRICK [L]	TRICK PLAY Ⓛ
S. DATA	SERIAL DATA	TRK. ENV	AUDIO TRACKING ENVEL OPE DETECT
S. DATA/A	SERIAL DATA / AUDIO	TU. AUDIO	TUNER AUDIO
S. PHOTO	SUPPLY PHOTO TRANSISTOR	TU. GND	TUNER GND
S.TAB [L]	SAFETY TAB SW ON Ⓛ	TU. V. IN	TUNER VIDEO SIGNAL INPUT
S/P/N	SECAM/PAL/NTSC	TU. VIDEO	TUNER VIDEO
SC IN	SERIAL CLOCK INPUT	TUN NOR IN	TUNER NORMAL INPUT
SC OUT	SERIAL CLOCK OUTPUT	TUN R	TUNER AUDIO (R)
SCK SELECT	SERIAL CLOCK SELECT	TUN. AUDIO IN	TUNER AUDIO INPUT
SEL OUT [L]	SELECT OUTPUT (L)	TUNER 12V	TUNER 12V
SEL OUT [R]	SELECT OUTPUT (R)	TUNER L	TUNER AUDIO (L)
SHUTTLE 1	SHUTTLE 1	TUNER V IN	TUNER VIDEO SIGNAL INPUT
SIF	SOUND INTERMEDIATE FREQUENCY	TUNER [L]	TUNER AUDIO (L)
SLMUT [H]	INPUT SELECT MUTE Ⓗ	TUNER [N]	TUNER AUDIO (NORMAL)
SLNID [+]	SOLENOID (+)	TUNER [R]	TUNER AUDIO (R)
SLNID [−]	SOLENOID (−)	TUNER. 12	TUNER 12V
SLW TR. MM	SLOW TRACKING MONO MULTI	TUOFF [H]	TUNER OFF Ⓗ
SLW TR. REF	SLOW TRACKING REFERENCE VOLTAGE	TV. AUDIO	TV AUDIO
		TV/VTR	TV/VTR
SNS. GND	SENSOR GND	TXTON [L]	TEXT ON Ⓛ
SOFT [H]	SOFT TAPE PLAY Ⓗ	U. REG45V	UNREGULATOR 45V
SOFT [H]/NORMAL	SOFT TAPE PLAY Ⓗ /NORMAL Ⓗ	UNREG	UNREGULATOR
SOLENOID ON [L]	SOLENOID ON Ⓛ	UNREG 19V	UNREGULATOR 19V
SP [H]	SP Ⓗ	V. REF	REFERENCE VOLTAGE
SP/L/SLP	SP/LP	V. EE [H]	VIDEO EE Ⓗ
SSS [L]	SLOW/STILL/STOP Ⓛ	V. EE [L]	VIDEO EE Ⓛ
STEREO LED	STEREO LED	VCO REF	REFERENCE OSCILLATOR
STEREO [H]	STEREO Ⓗ	VD. IN	VIDEO SIGNAL INPUT
STEREO [L]	STEREO Ⓛ	VD. OUT	VIDEO SIGNAL OUTPUT
STOP. PO	STOP POSITION	VIDEO EE [L]	VIDEO EE Ⓛ
STOP/5V	STOP POSITION/5V	VIDEO IN	VIDEO SIGNAL INPUT
STOP1/TAPE SEL	STOP1 POSITION/TAPE SELECT	VIDEO OUT	VIDEO SIGNAL OUTPUT
STOP1/PAL : ST	STOP 1 POSITION/PAL	VM	MOTOR VOLTAGE
STOP2. PO	STOP 2 POSITION	VM DOWN [L]	MOTOR VOLTAGE DOWN Ⓛ
STOP2 / S-TAB	STOP POSITION/SAFETY TAB SW	VSS	VERTICAL SYNC SIGNAL
STREO [H]	STEREO Ⓗ	VTR [H]	VTR Ⓗ
SUB BIAS	SUB BIAS	VTR. 12V	VTR 12V
SUB. SW	SUB SW	X IN	OSCILLATOR INPUT
SVHS CAS [L]	S-VHS CASSETTE Ⓛ	X OUT	OSCILLATOR OUTPUT
SW. 5. DET	SW 5V DETECT		
SYNC [L]	SYNC Ⓛ		
SYSCON 5V	SYSTEM CONTROL 5V		
SYSTEM	SYSTEM SW		
T-PHOTO	TAKE-UP PHOTO TRANSISTOR		
T-RL. PLS	TAKE-UP REEL PULSE		

3-2. SYSTEM CONTROL & SERVO SECTION BLOCK DIAGRAM

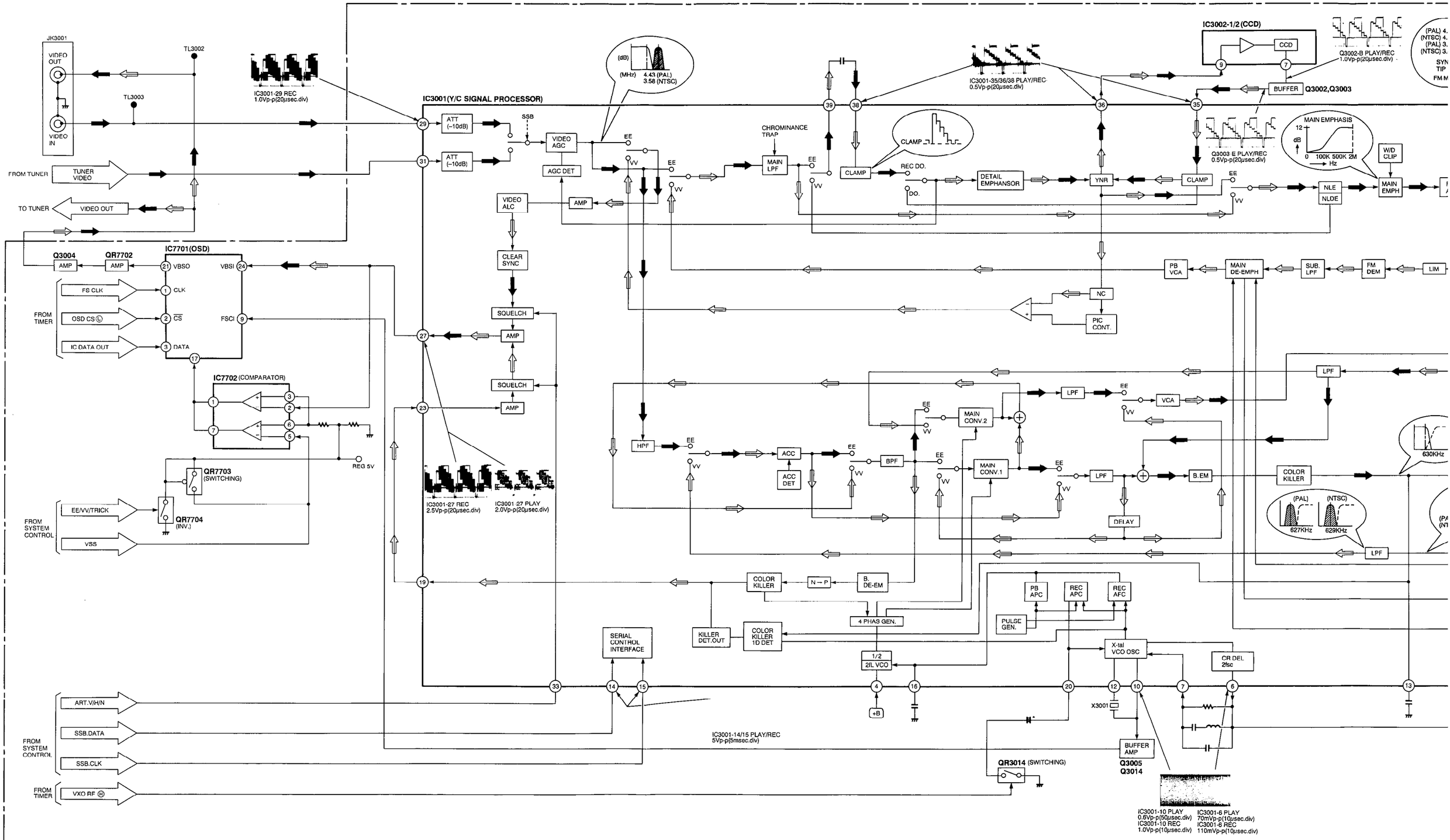



IC6001 M37776VIBV
77 CAP ET
12 CAP.REV:H STOP:M FWD:L
11 CURRENT LIMIT
89 QREF
85 CAP.FG
94 CTL.AMP.IN
93 CTL.AMP.SW
86 CYL.PG/FG
78 CYL ET
97 PB CTL
56 LOADING H
55 UNLOADING H
52 FF/REW L
53 V.CHANGE L
69 SERIAL DATA IN
68 SERIAL DATA OUT
70 SERIAL CLOCK
43 RESET L
39 12MHz OSC OUT
38 12MHz OSC IN
65 SSB DATA OUT
30 TV/VTR
TW2001
18 VIDEO HEAD SW
45 KILLER H
63 STEREO L
13 ARTIFICIAL V/H/N
29 AI L
20 D.REC H
64 BILIN L
67 SSB CLOCK
73 T.SAVE H
IC6001-77 PLAY
4Vp-p(5μsec.div)
IC6001-78 PLAY
5.0Vp-p(5μsec.div)
IC6001-85 PLAY
0.7Vp-p(5msec.div)
IC6001-86 PLAY
5.0Vp-p(10msec.div)
IC6001-68/69 PLAY
5.0Vp-p(5msec.div)
IC6001-70 PLAY
5.0Vp-p(5msec.div)
IC6001-38 PLAY
1.3Vp-p(20μsec.div)
IC6001-39 PLAY
2.5Vp-p(20μsec.div)
IC6001-65/67 PLAY
5.0Vp-p(5msec.div)
IC6001-79/80 PLAY
9.0Vp-p(0.2sec.div)
+5V
S7401 TV VTR
OFF-CH1-CH2
CH SW
FROM TUNER
+5V
S1501
SAFETY TAB SW
ABS TV L 82
SAFETY TAB ON L 87
POSITION SW2 L 32
POSITION SW1 L 33
POSITION SW3 L 31
S-REEL PULSE 79
T-REEL PULSE 80
SHORT DOWN L 44
BR(H)/NTSC 27
+5V
NN/NJ/NP/HP/HN/HJ 4
U4/U2/T2/T4/L2/L4 5
SSB.ON(H) 81
C.EMPHASYS H 21
H.AMP SW 16
ROTARY SW 15
EE: H/VV: M/TRICK: L 25
PAL M H 46
FM MUTE H 28
SLP H/LP M/SP L 57
V-SYNC.SIG. 84
ENV.SELECT 17
TRACKING ENVE. 9
AUDIO.H.SW 19
AAA.OFF(H) 72
CTL AMP REF 95
CTL AMP GND 96
ABS-NORM(L)/A.AST 66
CTL(–) SIG 91
CTL(+) SIG 92
BIAS L 26
TAPE SENSOR LED ON L 10
NOR: H/SVC/T2: M/TEST: L 6
T.PHOTO SENSOR 8
S.PHOTO SENSOR 7
POWER OFF H 51
C.EMPHASYS
TO HEAD AMP
H.AMP SW
TO VIDEO HEAD AMP
ROTARY SW
TO VIDEO
EE/VV/TRICK
TO VIDEO
PAL M H
FROM VIDEO
FM MUTE H
TO AUDIO
S/L/SLP
TO VIDEO
V-SYNC.SIG.
FROM VIDEO
ENV.SELECT
FROM HEAD AMP
TRACKING ENVE.
FROM HEAD AMP
A.H SW
TO HEAD AMP
AAA.OFF(H)
ABS-NORM L
TO AUDIO
<TIMING CHART>
SW 1
SW 2
SW 3
MODE EJECT
CASSETTE DOWN
MID
REV
PLAY STOP3
STOP
FF/REW
P1501
1
2
3
4
MODE SW
POSITION SW
IC1502
T.REEL SNS
IC1501
S.REEL SNS
REG 5V
TL24
TL23
REG 5V
P4002 5
P504 5
P503 5
P1501 2
P4002 6
P504 6
P503 6
P1501 1
CTL HEAD
REG 5V
Q6001
T4001
Q4001
P4001 1
2,3
FF HEAD
+5V
Q6004
D1501
SENSOR LED
+5V
TL6010
TL6011
SERVICE
+5V
Q1501
TAKE-UP PHOTO TR
Q1502
SUPPLY PHOTO TR
REG 12.3V
P OFF L
TO POWER
QR1001

3-3. VIDEO SECTION BLOCK DIAGRAM

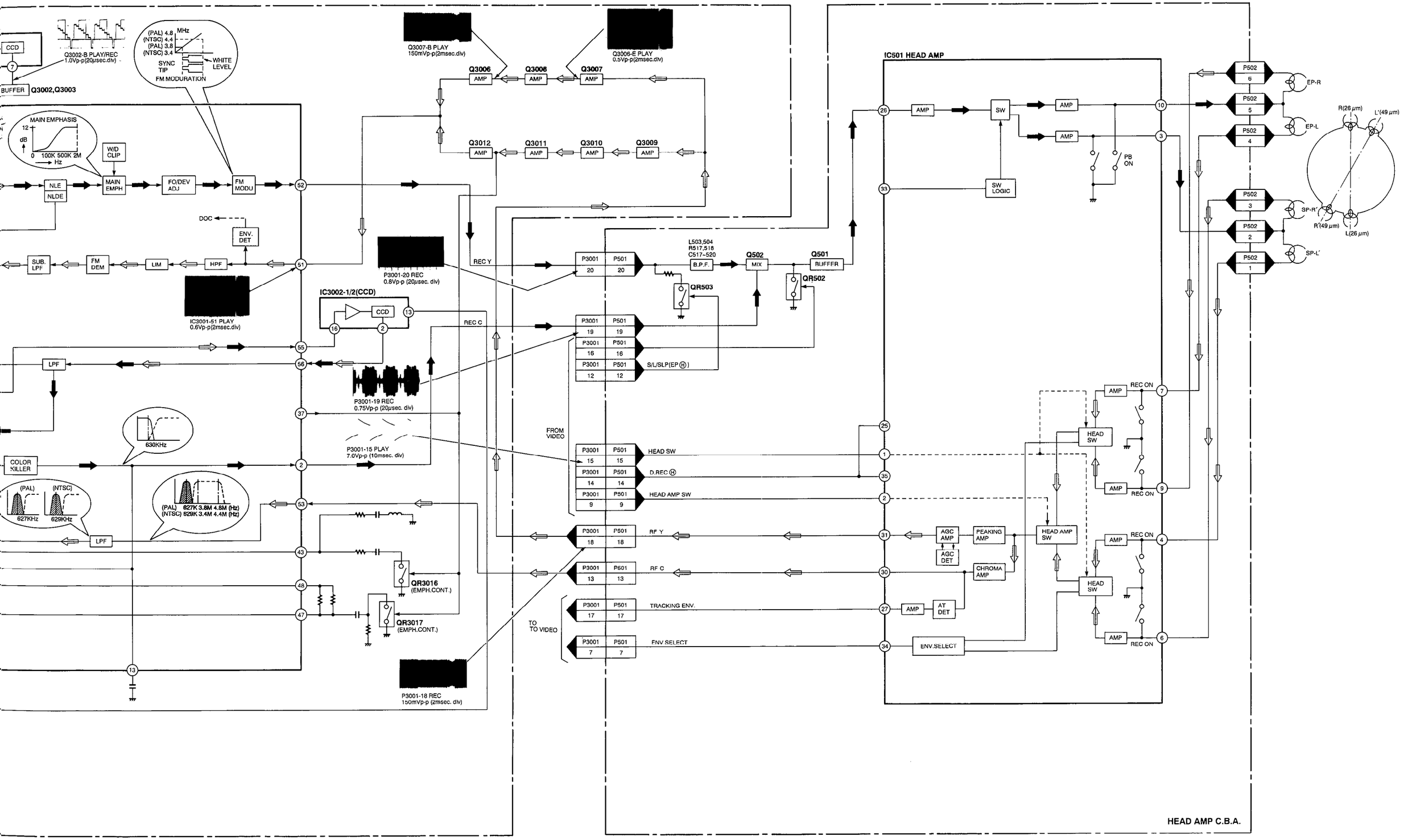
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

VIDEO MAIN SIGNAL PATH IN



VIDEO SECTION

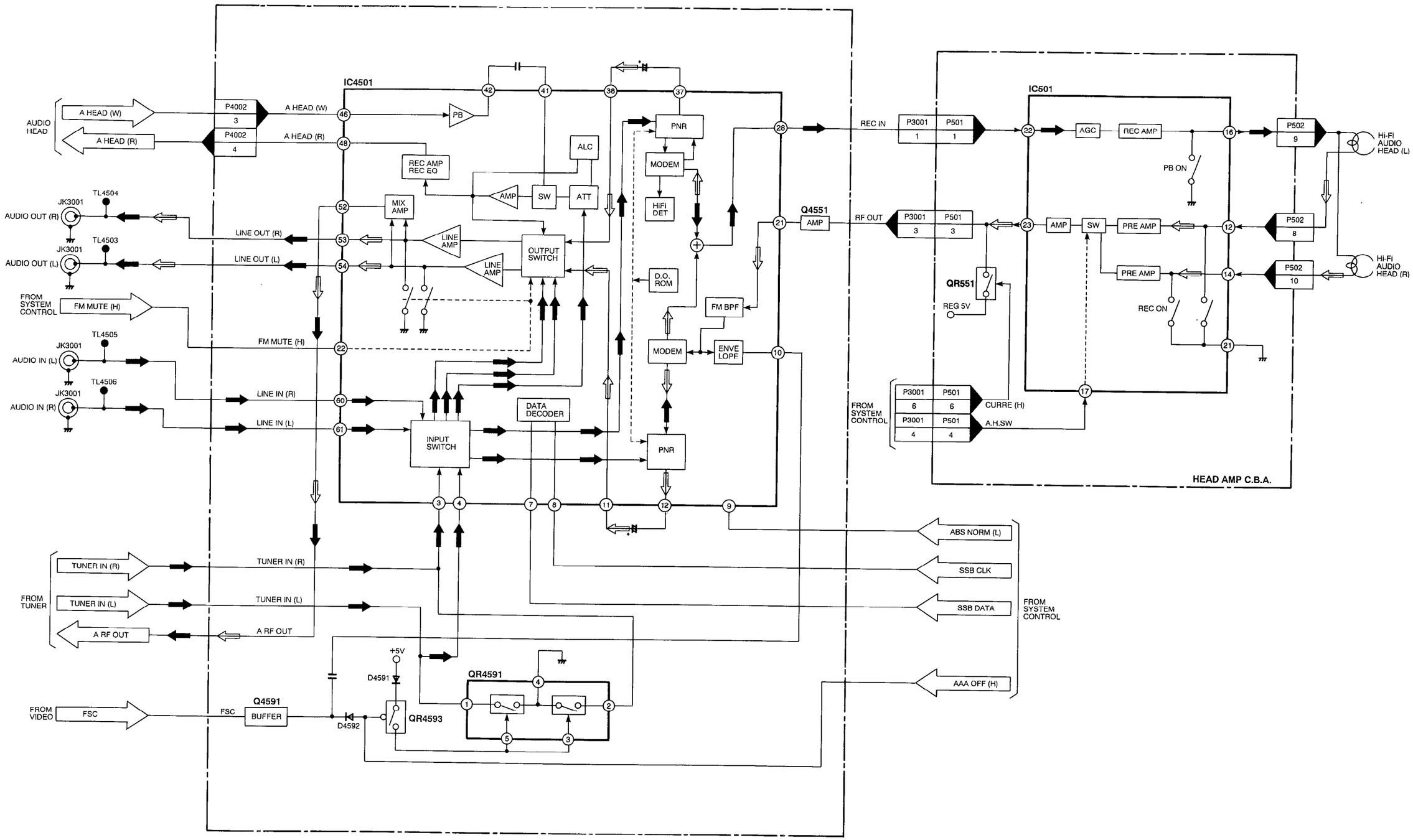
VIDEO MAIN SIGNAL PATH IN REC MODE



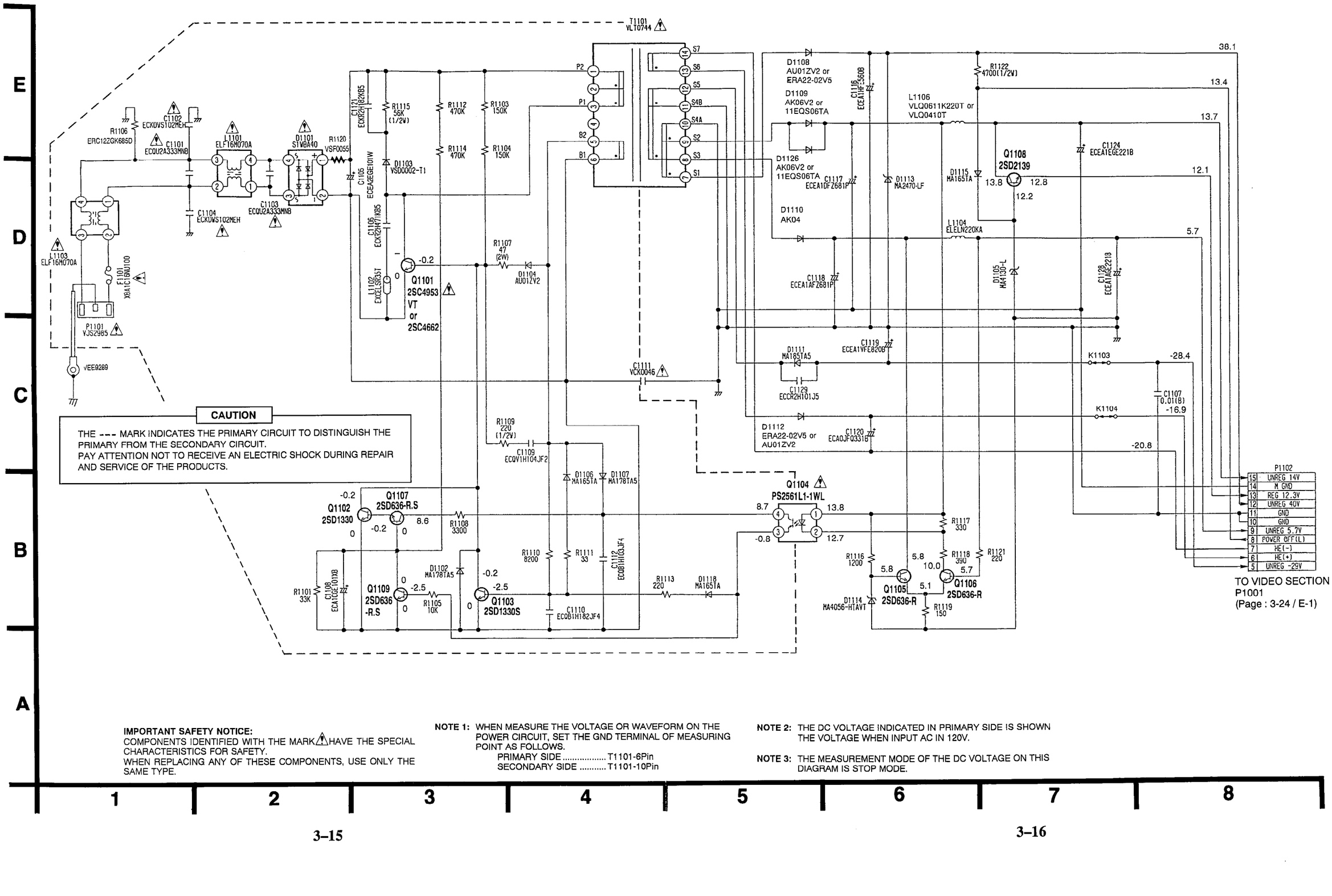
3-4. Hi-Fi AUDIO BLOCK DIAGRAM

MAIN SIGNAL PATH IN PLAYBACK MODE

MAIN SIGNAL PATH IN REC MODE



3-5. POWER SCHEMATIC DIAGRAM



CAUTION

THE --- MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE 1: WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER CIRCUIT, SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE T1101-6Pin
SECONDARY SIDE T1101-10Pin

NOTE 2: THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IN 120V.

NOTE 3: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

3-6. POWER C.B.A. (VEP01627D)

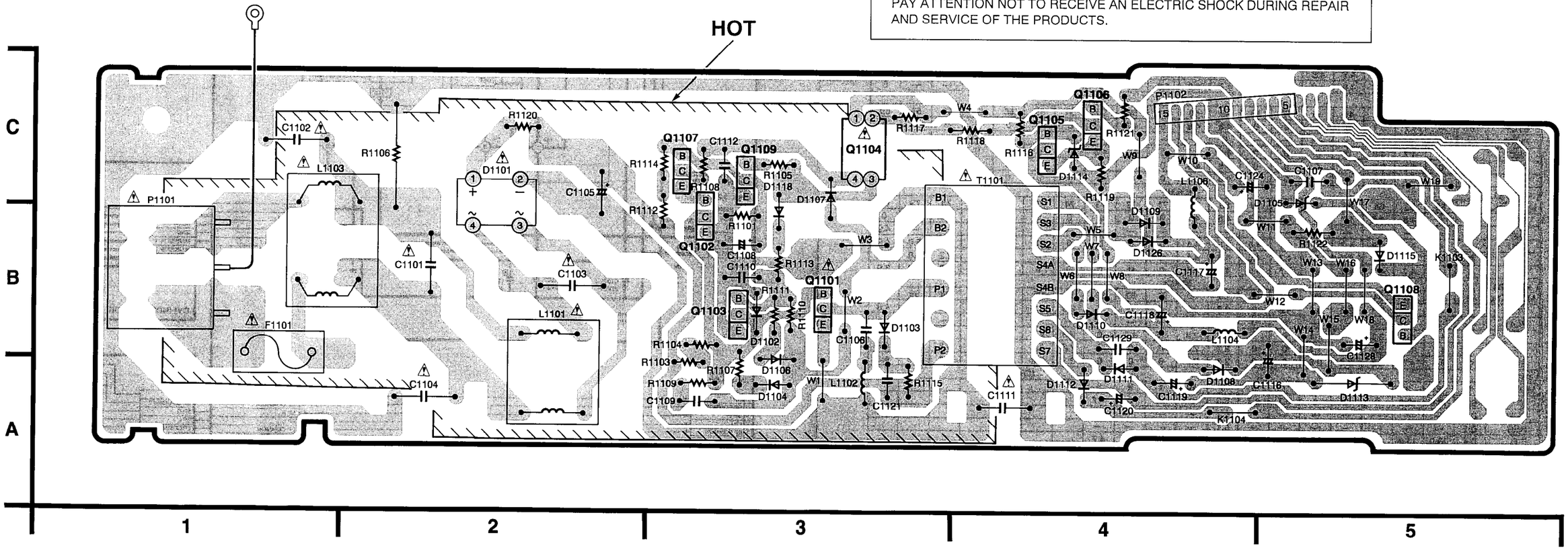
POWER C.B.A.	
Transistor	
Q1101	B-3
Q1102	B-3
Q1103	B-3
Q1104	C-3
Q1105	C-4
Q1106	C-4
Q1107	C-3
Q1108	B-5
Q1109	C-3
Connector	
P1101	B-1
P1102	C-4

ADDRESS INFORMATION

IMPORTANT SAFETY NOTICE :
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SAME TYPE.

CAUTION

THE ⏥ MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.



SYSTEM CONTROL & SERVO DC VOLTAGE

REF. NO. / MODE	IC1501 1	2	3	4							IC1502 1	2	3	4						
STOP	2.3	1.1	0	0							1.1	0	4.9	0						
PLAY	—	—	4.9	0							—	—	—	—						
REC	—	—	4.9	0							—	—	—	—						
F.F	2.3	1.1	4.9	0							1.1	0	4.9	0						
REW	2.3	1.1	4.9	0							1.1	0	4.9	0						

REF. NO. / MODE	IC2501 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	1.8	4.3	1.8	13.4	1.1	13.9	0	0	1.2	2.7	2.3	0	0	4.8	1.4	0	2.1	2.1	2.1	2.1
PLAY	2.9	—	2.8	12.6	2.1	—	—	0.5	0.5	—	—	0.3	—	—	—	—	—	—	—	—
REC	2.9	—	2.8	12.6	2.1	—	—	0.5	0.5	—	—	0.3	—	—	—	—	—	—	—	—
F.F	7.3	13.6	7.3	6.0	11.7	13.7	0	0.5	0.5	2.7	2.0	0.3	0	4.8	1.4	0	2.1	2.1	2.1	2.1
REW	7.3	13.6	7.3	6.9	11.7	13.7	0	0.5	0.5	2.7	2.0	0.3	0	4.8	1.4	0	2.1	2.1	2.1	2.1

REF. NO. / MODE	IC2501 21	22	23	24	25	26	27	28	29	30	31	32
STOP	2.1	2.1	0	6.3	6.2	6.3	5.8	12.2	2.3	1.8	0	0
PLAY	—	—	—	—	—	—	—	—	0	3.1	—	—
REC	—	—	—	—	—	—	—	—	0	3.1	—	—
F.F	2.1	2.1	0	6.3	6.2	6.3	5.9	12.3	0	8.1	0.1	0
REW	2.1	2.1	0	6.3	6.2	6.3	5.9	12.3	4.8	7.8	0	0

REF. NO. / MODE	IC2502 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
STOP	13.6	13.6	0	0.5	0	2.3	2.3	1.1	1.1	2.5	4.8	3.5	3.5	3.5	1.1	13.9	13.6	0
PLAY	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
REC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
F.F	13.4	13.4	0	0.5	0	2.3	2.3	1.1	1.1	2.5	4.8	3.5	3.5	3.5	0.8	13.7	13.4	0
REW	13.4	13.4	0	0.5	0	2.3	2.3	1.1	1.1	2.5	4.8	3.5	3.5	3.5	0.8	13.7	13.4	0

REF. NO. / MODE	IC6001 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	0	4.8	4.8	4.8	4.6	4.7	1.9	4.8	0	2.3	0	0	0	0	1.6	4.8	0	0
PLAY	—	—	—	—	—	—	—	—	3.9	0	4.7	0	—	—	4.8	—	0	—	4.8	—
REC	—	—	—	—	—	—	—	—	2.4	0	4.7	0	—	—	4.8	—	4.8	—	0	4.7
F.F	0	0	0	4.8	4.8	4.8	4.6	4.7	2.2	0	4.7	0	0	0	0	0	3.7	4.8	0	0
REW	0	0	0	4.8	4.8	4.8	4.6	4.7	2.7	0	4.7	4.7	0	0	0	0	3.7	4.8	0	0

REF. NO. / MODE	IC6001 21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0	0	0	0	4.8	4.8	0	0	4.8	0	4.8	0	0	0	0	4.8	4.8	2.2	2.2	0
PLAY	—	—	—	4.8	3.5	—	—	—	—	4.8	—	—	—	—	—	—	—	—	—	—
REC	—	—	—	0	4.7	0	0	0	4.7	4.7	4.8	0	0	0	0	4.8	4.8	—	—	0
F.F	0	0	0	0	4.7	4.8	0	0	4.7	4.7	4.8	4.7	0	0	0	4.8	4.8	—	—	0
REW	0	0	0	0	4.8	4.8	0	0	4.7	4.8	4.8	4.7	0	0	0	4.8	4.8	—	—	0

REF. NO. / MODE	IC6001 41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	0	0	4.7	0.1	0	0	0	0	4.8	4.8	0	4.7	4.8	0	0	0	0	0	0	0
PLAY	—	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—
REC	0	0	4.7	4.8	0	0	0	0	4.8	4.8	0	4.7	4.8	0	0	0	0	0	0	0
F.F	0	0	4.7	0.2	0	0	0	0	4.8	4.8	0	0	0	0	0	0	0	0	0	0
REW	0	0	4.7	0.2	0	0	0	0	4.8	4.8	0	0	0	0	0	0	0	0	0	0

REF. NO. / MODE	IC6001 61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	0	0	4.8	4.8	4.7	0	4.8	4.5	4.5	4.1	0	0	0	0	0	0	2.3	2.3	5.0	0
PLAY	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.9
REC	0	0	4.8	4.8	4.7	0	4.8	4.5	4.5	4.1	0	0	0	0	0	0	2.3	2.3	5.0	4.9
F.F	0	0	4.7	4.7	4.7	0	4.7	4.5	4.5	4.1	0	0	0	0	0	0	1.8	2.2	5.0	2.3
REW	0	0	4.7	4.7	4.7	0	4.7	4.5	4.5	4.1	0	0	0	0	0	0	2.3	2.2	5.0	3.9

REF. NO. / MODE	IC6001 81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	0	4.8	4.8	2.3	2.3	0.8	4.8	0	2.3	2.3	0	0	0	2.3	2.3	0	2.3	4.8	4.8	4.8
PLAY	—	—	—	—	—	—	0	0	—	—	—	—	—	—	—	—	—	—	—	—
REC	0	4.8	4.8	2.3	—	1.1	0	0	2.3	2.3	3.6	4.5	0	2.3	2.3	0	2.3	4.8	4.8	4.8
F.F	0	4.7	4.7	2.3	2.3	1.1	0	0	2.3	2.3	0	0	0	2.3	2.3	0	2.3	4.8	4.8	4.8
REW	0	4.7	4.8	2.3	2.3	0.8	0	0	2.3	2.3	0	0	0	2.3	2.3	0	2.3	4.8	4.8	4.8

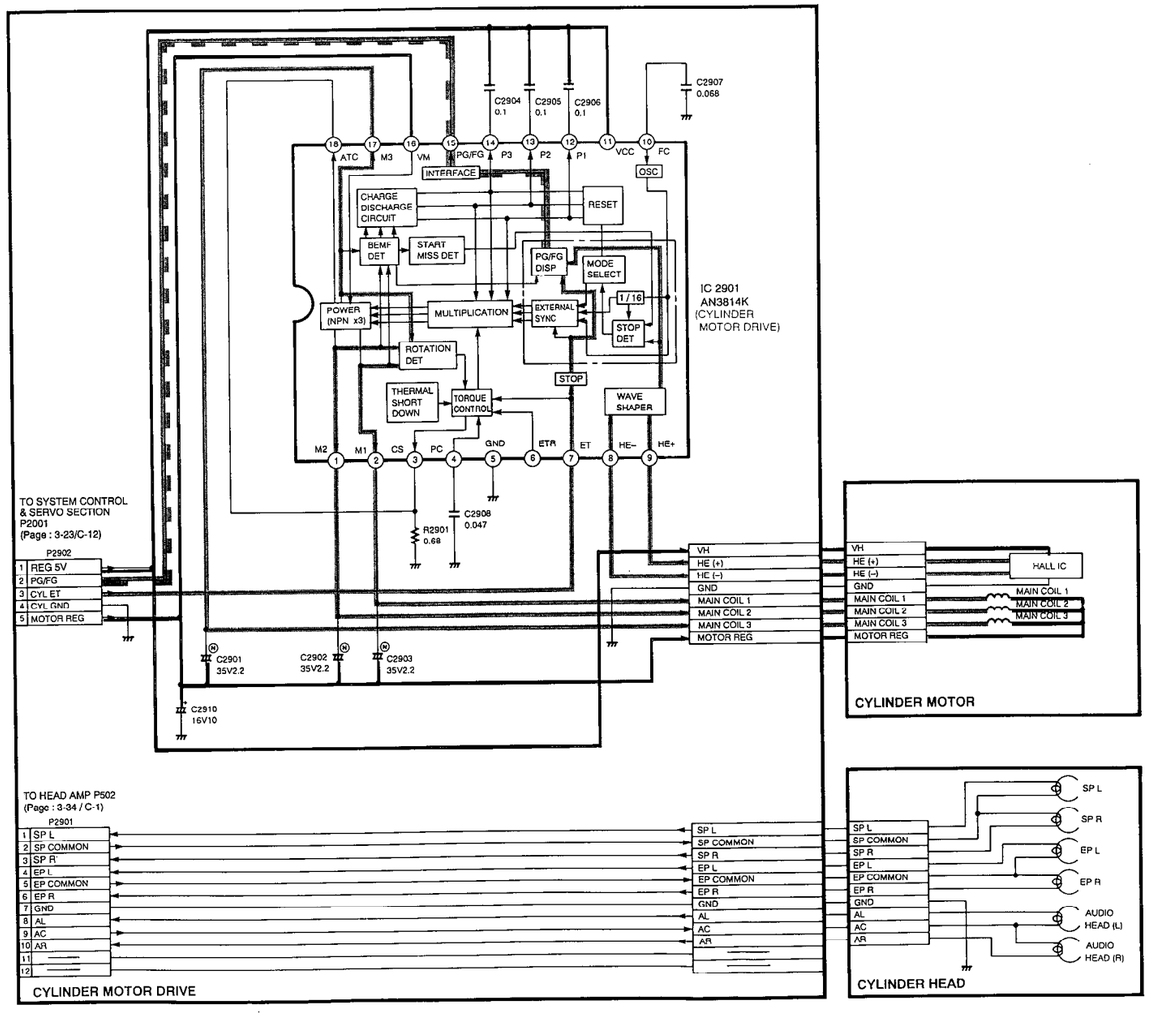
REF. NO. / MODE	IC6002 1	2	3	4	5	6	7	8	9	10	IC6003 1	2	3
STOP	0.4	13.9	13.9	0	0	0	6.7	8.7	0.3	0	4.8	0	4.7
PLAY	0.1	—	—	—	—	—	—	—	0.1	—	—	—	—
REC	0.1	—	—	—	—	—	—	—	0.1	—	—	—	—
F.F	0.4	13.9	13.9	0	0	0	13.7	8.7	0.3	0	4.8	0	4.7
REW	0.4	13.9	13.9	0	0	0	13.7	8.7	0.3	0	4.8	0	4.7

REF. NO. / MODE	Q1501 E	C	B	Q1502 E	C	B	Q6001 E	C	B	Q6004 E	C	B	QR2001 E	C	B	QR6001 1	2	3	4	5
STOP	0	4.7		0	4.7		5.0	0.1	4.8	4.8	-0.5	4.8	0	0	4.7	0	0	4.7	0	4.8
PLAY	—	—		—	—		—	—	—	—	4.7	3.9	—	—	—	—	—	—	—	—
REC	—	—		—	—		—	4.8	4.1	—	4.7	3.9	—	—	—	—	—	—	—	—
F.F	—	4.5		—	4.5		5.0	0.2	4.8	4.8	4.7	3.9	0	0	0	13.7	13.7	0	0	0
REW	0	4.5		0	4.5		5.0	0.2	4.8	4.8	4.7	3.9	0	0	0	13.7	13.7	0	0	0

■ CYLINDER DRIVE SCHEMATIC DIAGRAM

CYLINDER SERVO PHASE LOOP

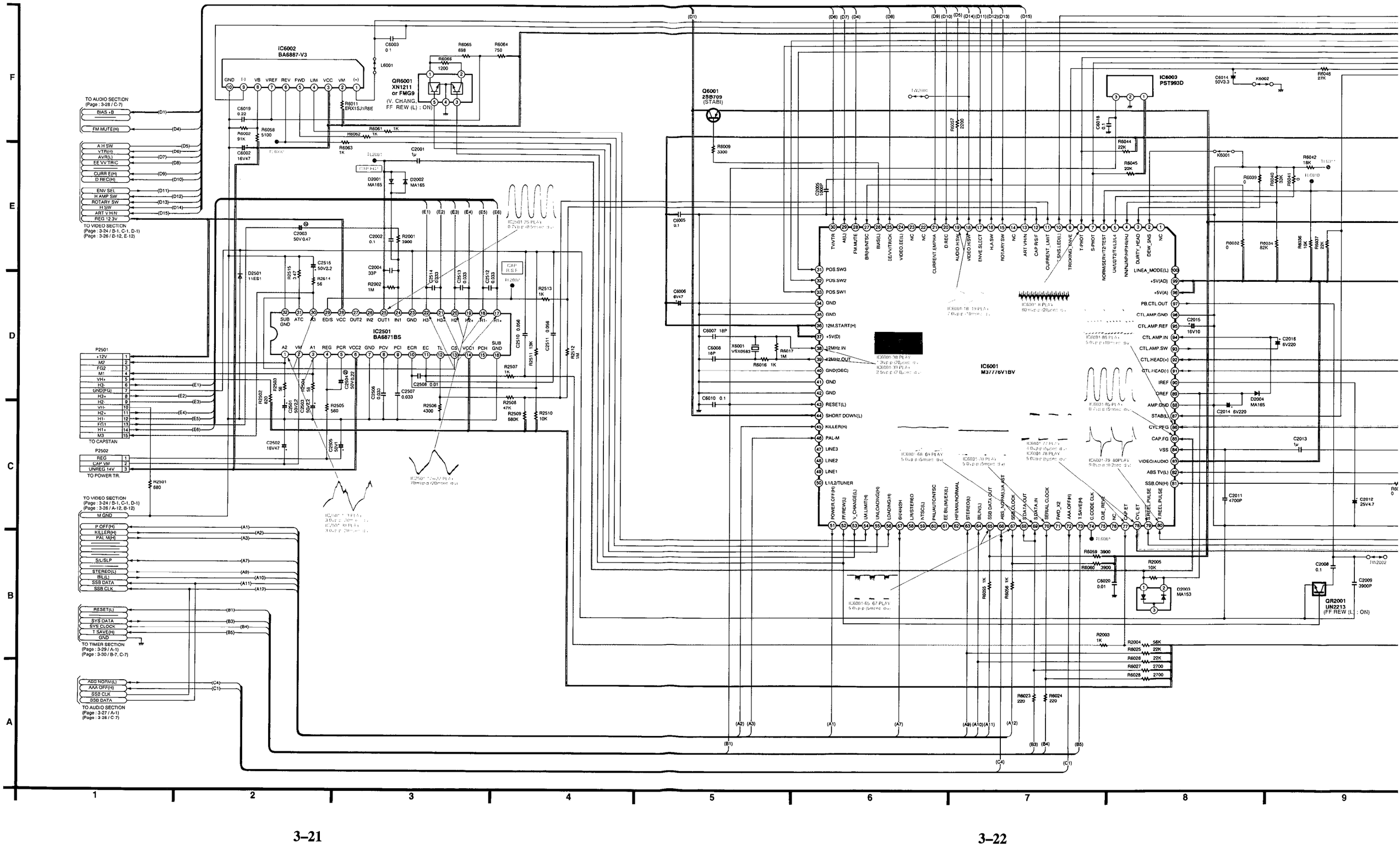
CYLINDER SERVO SPEED LOOP



3-7. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM

CAPSTAN SERVO PHASE LOOP

CYLINDER SERVO PHASE LOOP



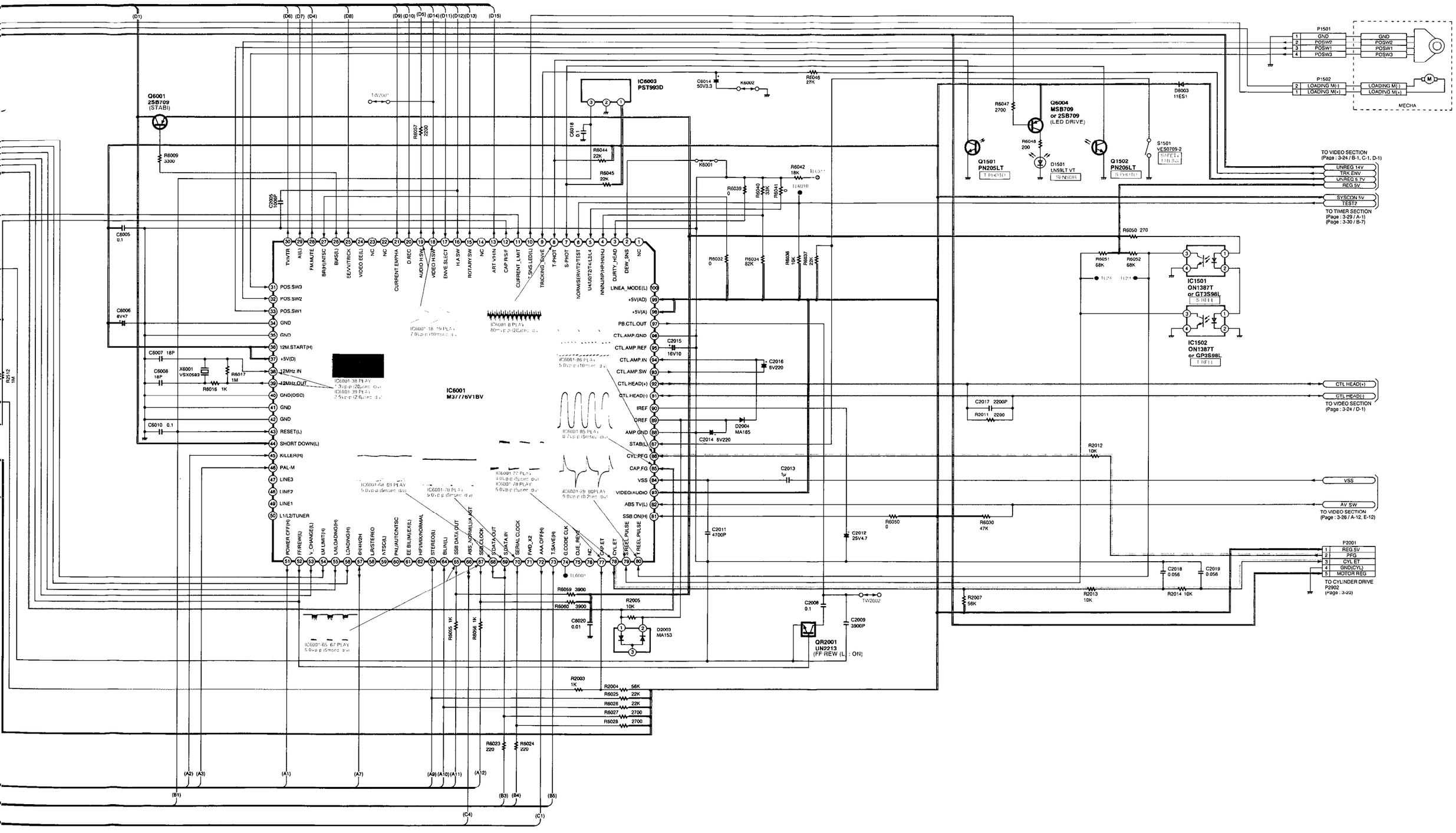
GRAM

CAPSTAN SERVO PHASE LOOP

CYLINDER SERVO PHASE LOOP

CAPSTAN SERVO SPEED LOOP

CYLINDER SERVO SPEED LOOP

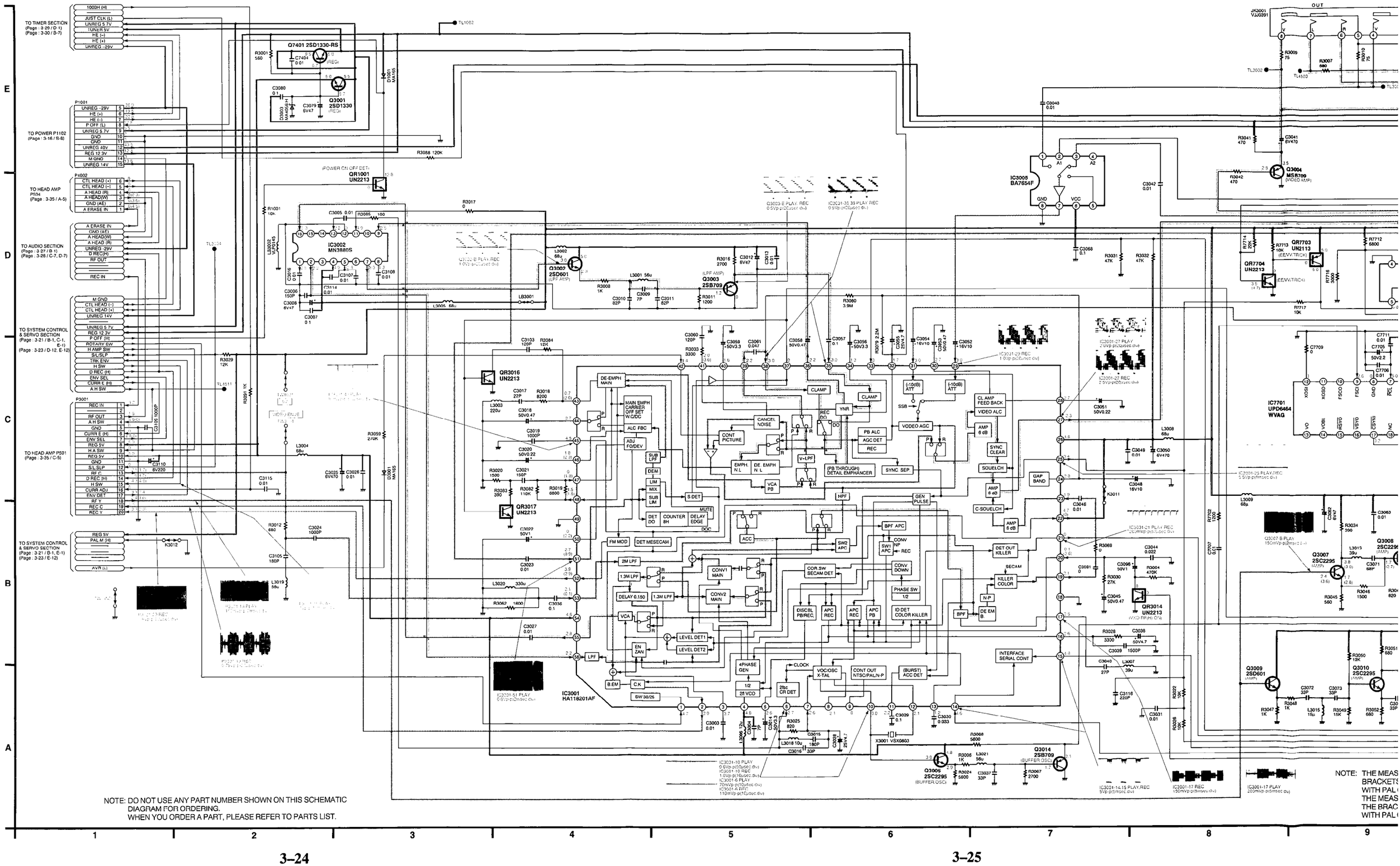


3-8. VIDEO SECTION IN MAIN SCHEMATIC DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE

VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

AUDIO MAIN

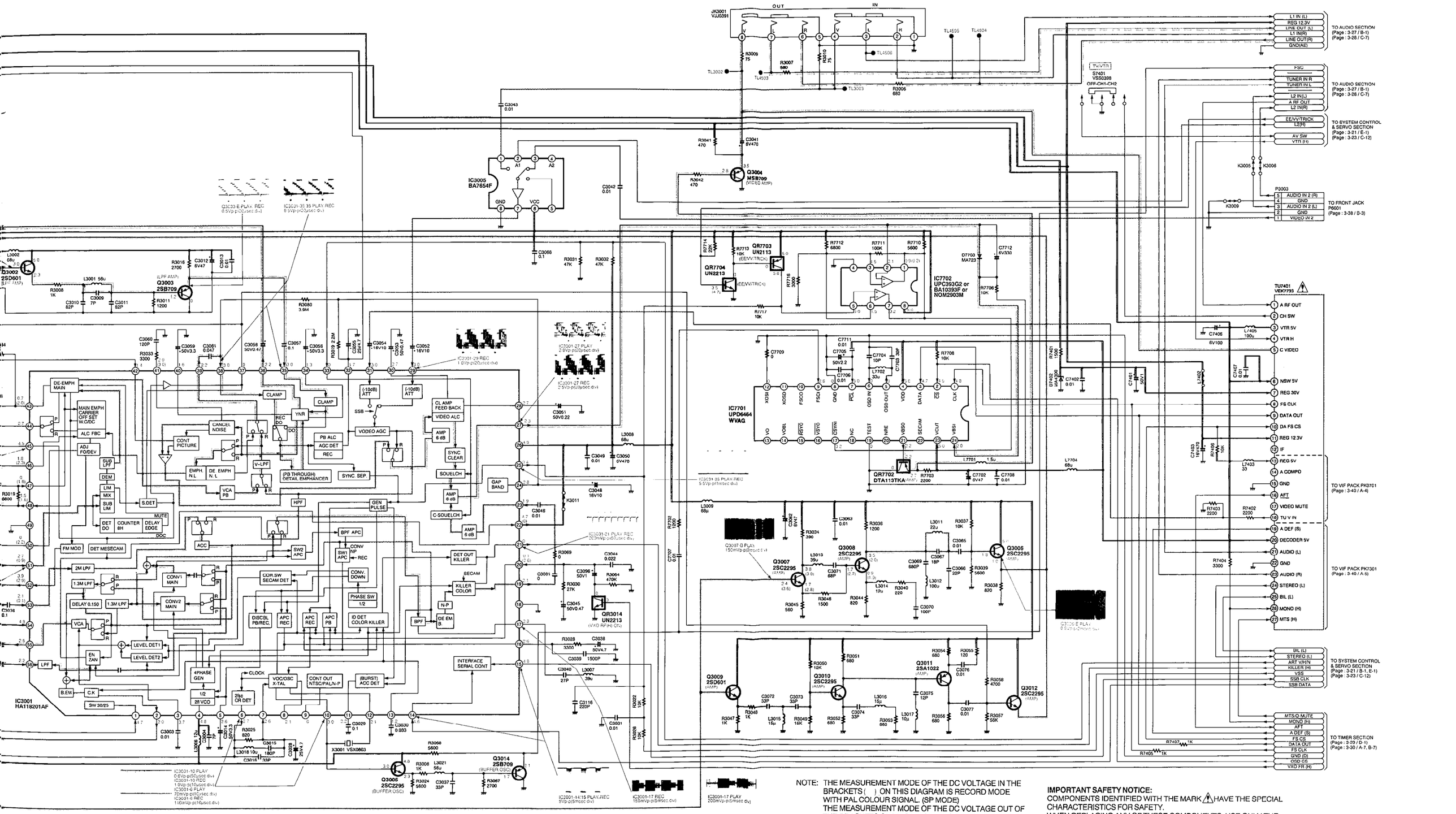


VIDEO MAIN SIGNAL PATH IN REC MODE

VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



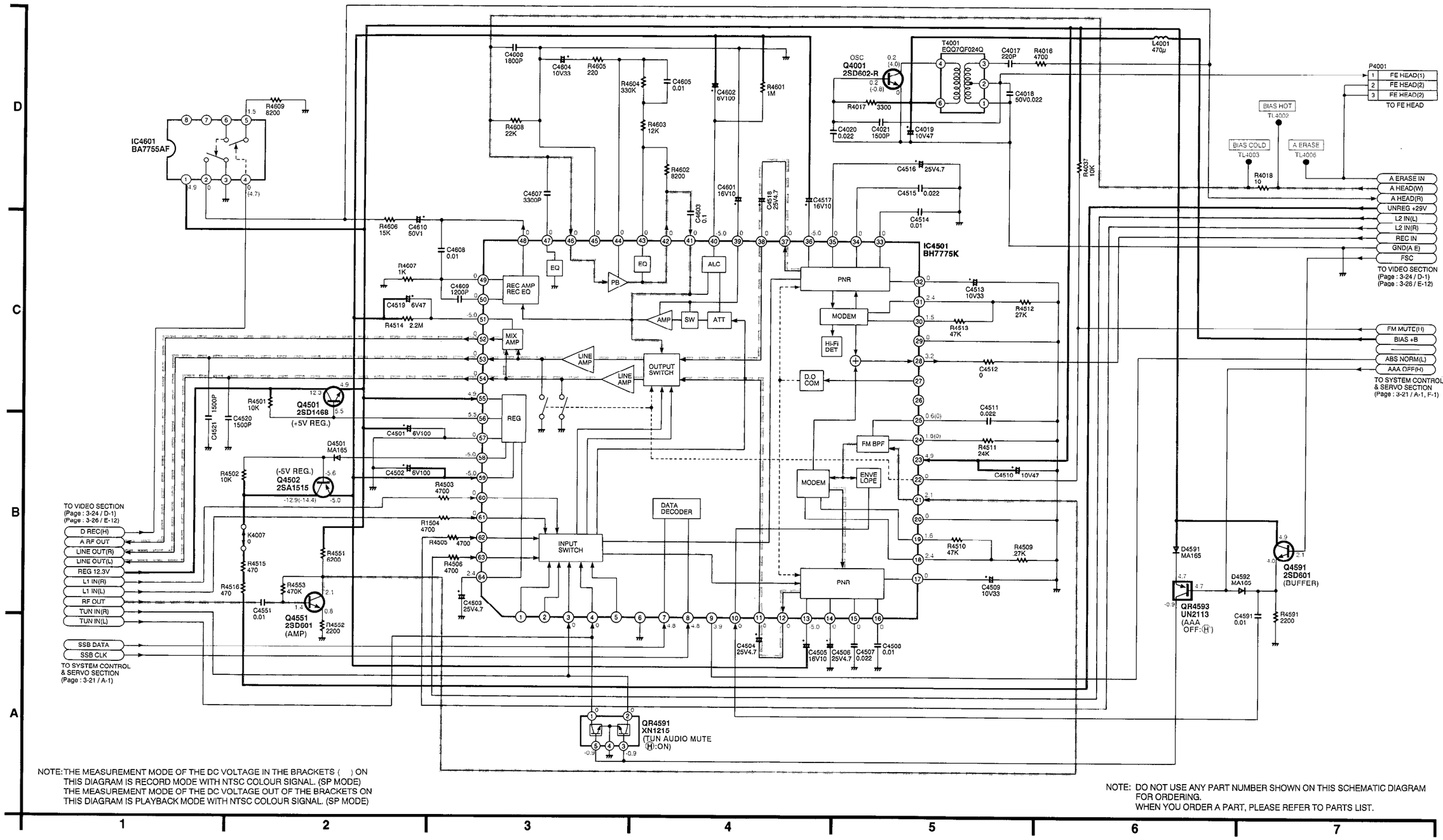
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

3-9. AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH NTSC COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH NTSC COLOUR SIGNAL. (SP MODE)

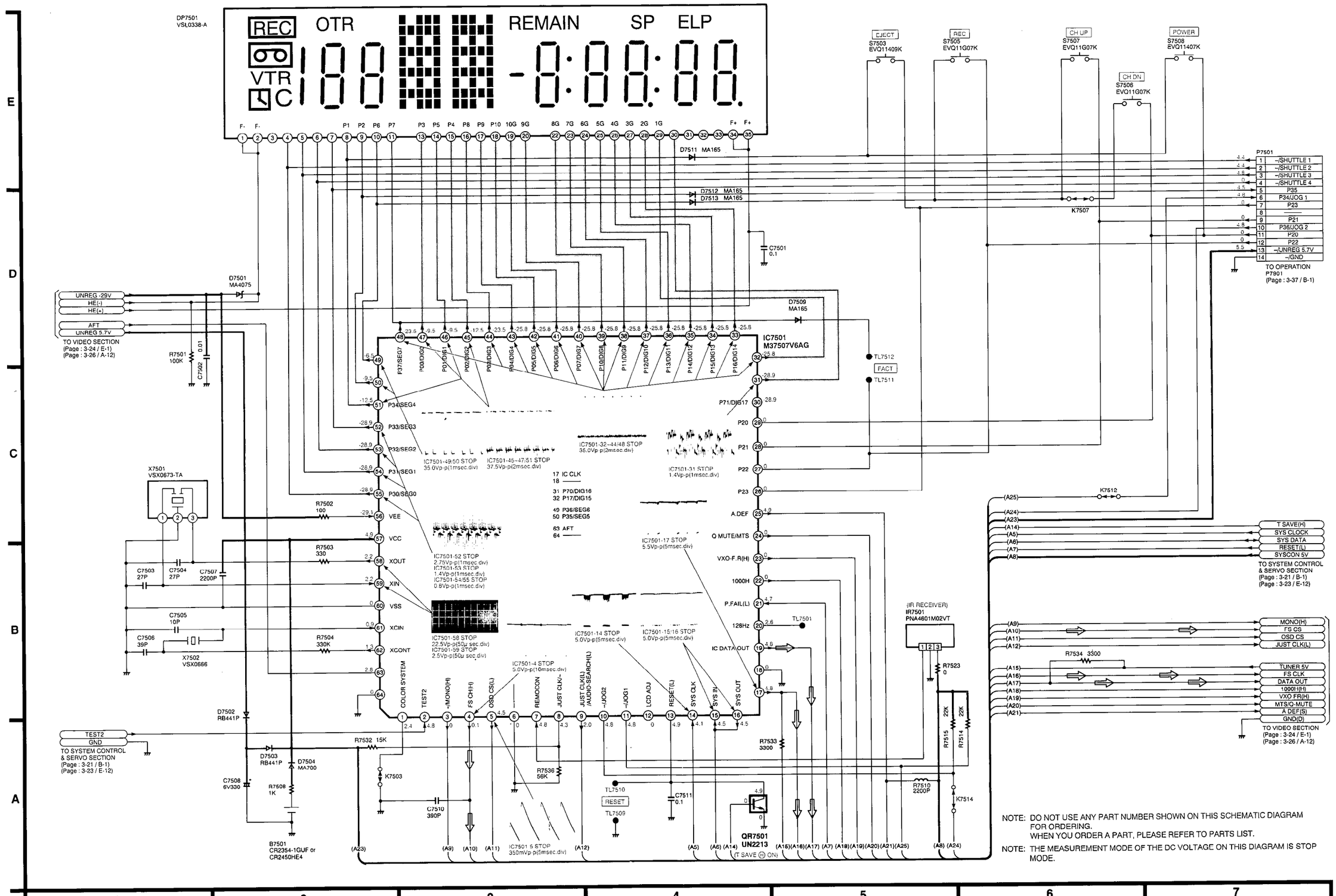
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-10. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM

GRID CONTROL SIGNAL PATH

SEGMENT CONTROL SIGNAL PATH

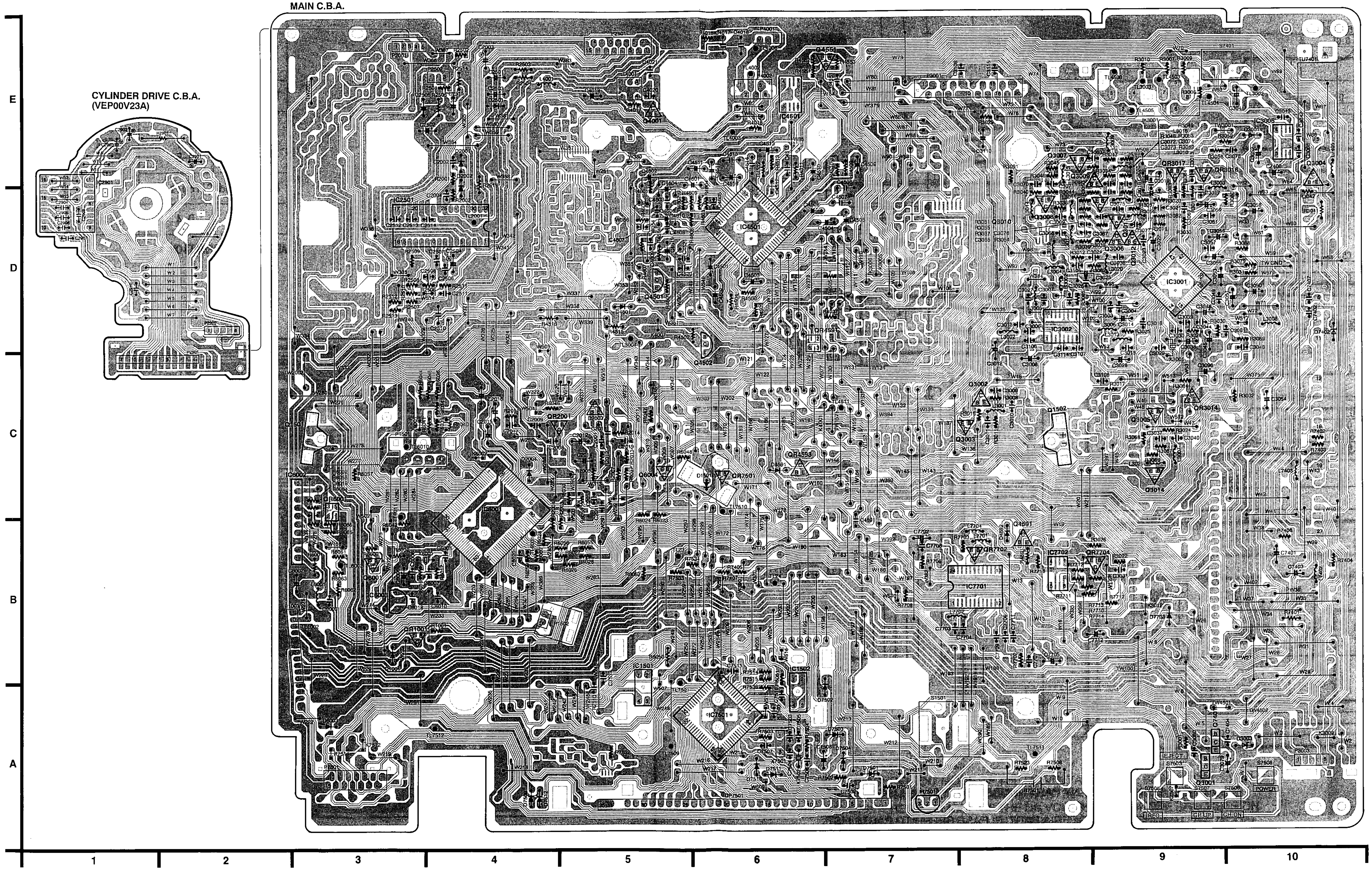
TUNER CONTROL SIGNAL PATH



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

3-11. MAIN C.B.A. (VEP06B35M)



MAIN C.B.A.

Transistor	
Q1501	C-3
Q1502	C-8
Q3001	A-9
Q3002	C-8
Q3003	C-8
Q3004	E-10
Q3005	C-9
Q3006	D-9
Q3007	E-8
Q3008	D-8
Q3009	E-9
Q3010	D-9
Q3011	D-9
Q3012	D-9
Q3014	C-9
Q4001	E-5
Q4501	D-5
Q4502	D-6
Q4551	E-6
Q6001	B-3
Q6004	C-5
Q7401	A-9

Transistor & Resistor	
QR1001	B-3
QR2001	C-4
QR3014	C-9
QR3016	E-9
QR3017	E-9
QR4591	D-6
QR4593	C-6
QR6001	C-3
QR7501	C-6
QR7702	B-8
QR7704	B-9

Integrated Circuit	
IC1501	B-5
IC1502	B-6
IC2501	D-3
IC3001	D-9
IC3002	D-8
IC3005	E-10
IC4501	D-6
IC4601	E-6
IC6001	C-4
IC6002	C-3
IC6003	B-3
IC7501	A-6
IC7701	B-8
IC7702	B-8

Test Wire	
TW1001	B-9
TW2001	E-3
TW2002	C-3
TW4501	A-9
TW4502	A-10
TW GND	D-10

Test Land	
TL23	B-5
TL24	B-6
TL1002	B-3
TL2001	D-4
TL3002	E-10
TL3003	E-9
TL3004	D-5
TL4002	E-6
TL4003	E-6
TL4006	E-6

TL4503	E-9
TL4504	E-9
TL4505	E-9
TL4506	E-9
TL4511	C-7
TL6001	B-4
TL6002	B-3
TL6010	C-3
TL6011	C-3
TL7501	B-5
TL7509	A-5
TL7510	C-6
TL7511	A-8
TL7512	A-4

Connector	
P1001	B-3
P1501	C-3
P1502	B-5
P2001	E-3
P2003	E-3
P2501	E-5
P2502	E-4
P3001	E-7
P3003	A-10
P4001	E-6
P4002	E-6
P7501	A-3

ADDRESS INFORMATION

IMPORTANT SAFETY NOTICE :

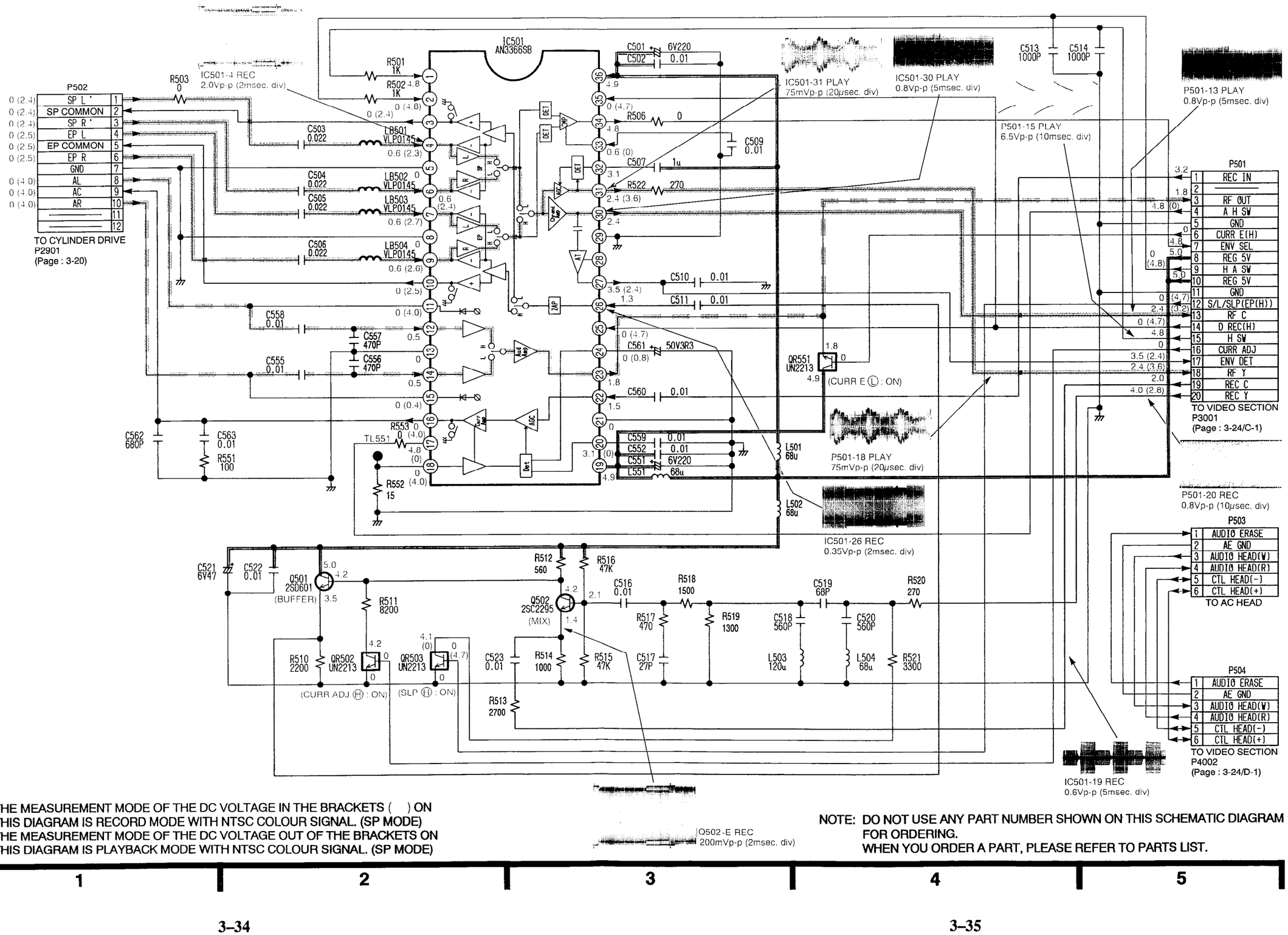
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.

WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SAME TYPE.

3-12. HEAD AMP SCHEMATIC DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



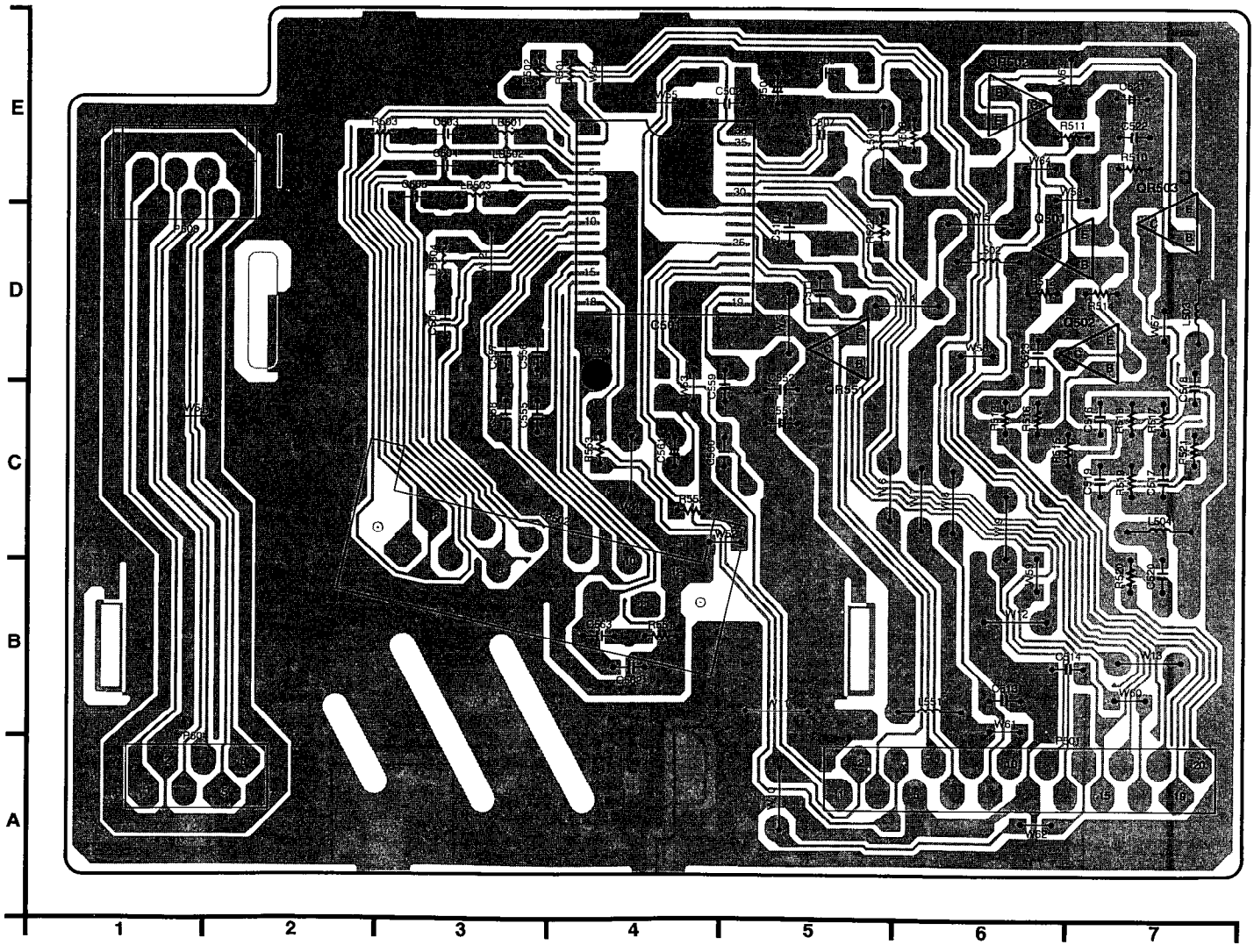
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH NTSC COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH NTSC COLOUR SIGNAL. (SP MODE)

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

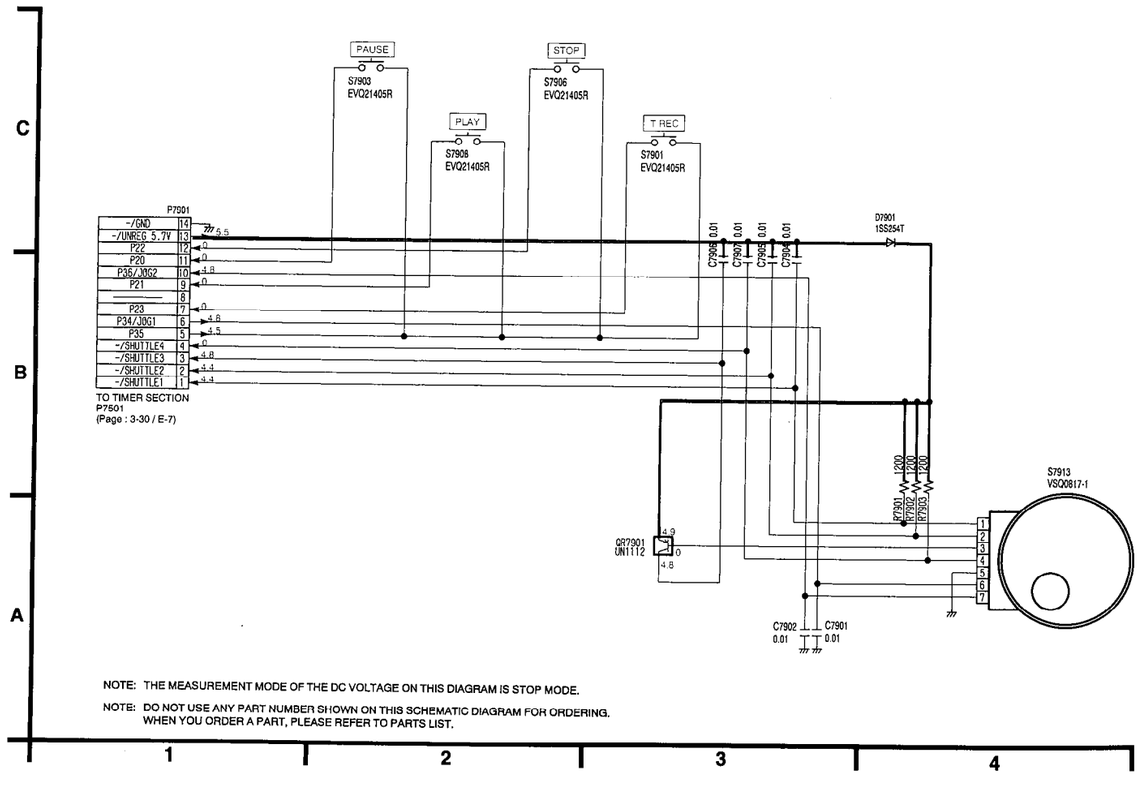
3-13. HEAD AMP C.B.A. (VEP05331A)

HEAD AMP C. B. A.			
Transistor		Test Land	
Q501 Q502	D-7 D-7	TL551	D-4
Transistor & Resistor		Connector	
QR502 QR503 QR551	E-6 D-7 D-5	P501 P502 P503 P504	A-6 C-3 E-1 A-1
Integrated Circuit			
IC501	D-4		

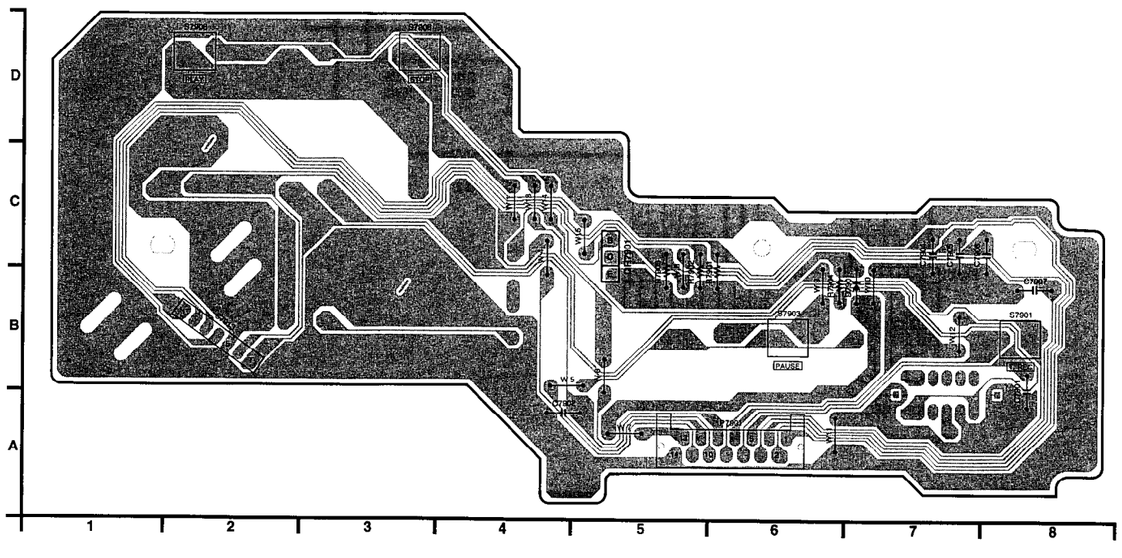
ADDRESS INFORMATION



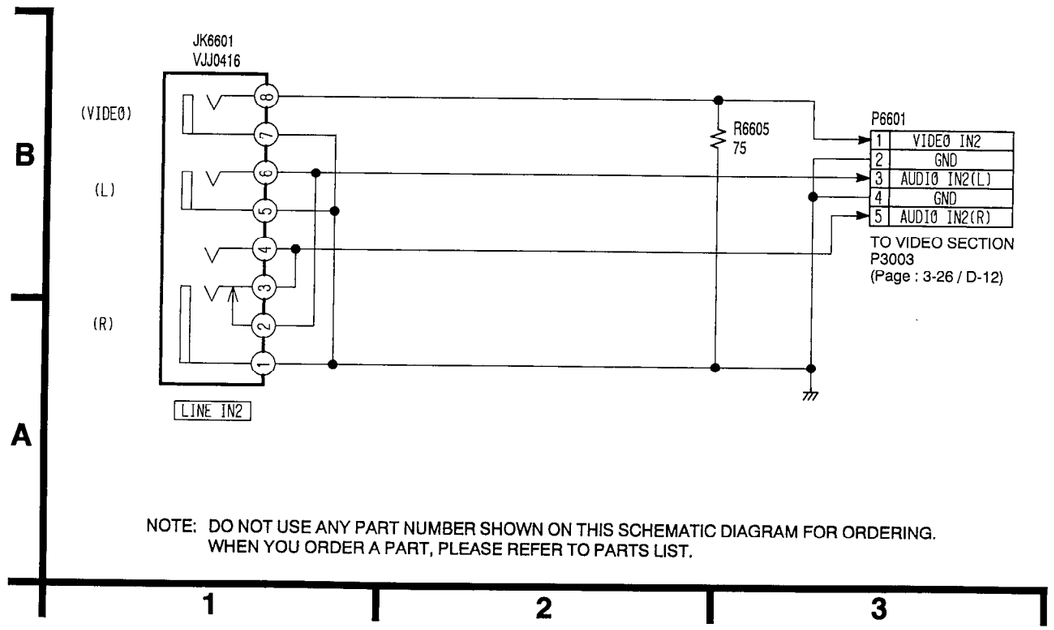
3-14. OPERATION SCHEMATIC DIAGRAM



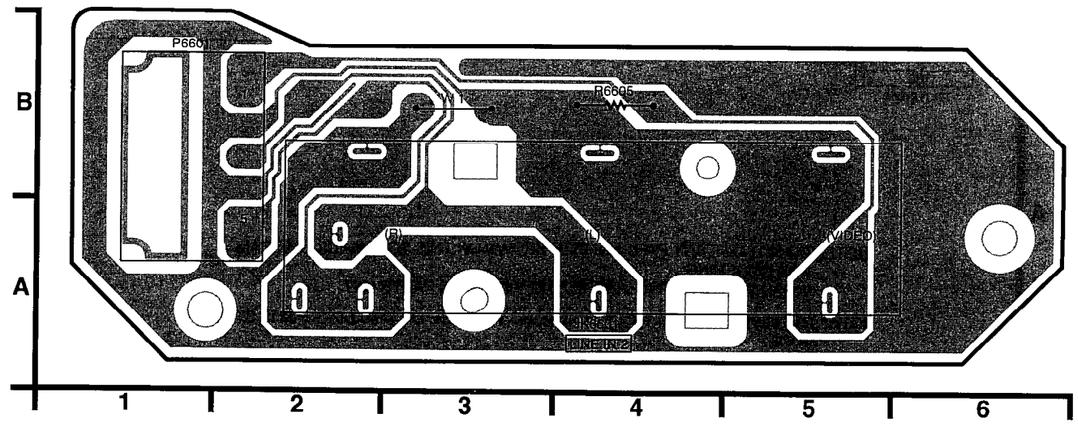
3-15. OPERATION C.B.A. (VEP07942B)



3-16. FRONT JACK SCHEMATIC DIAGRAM



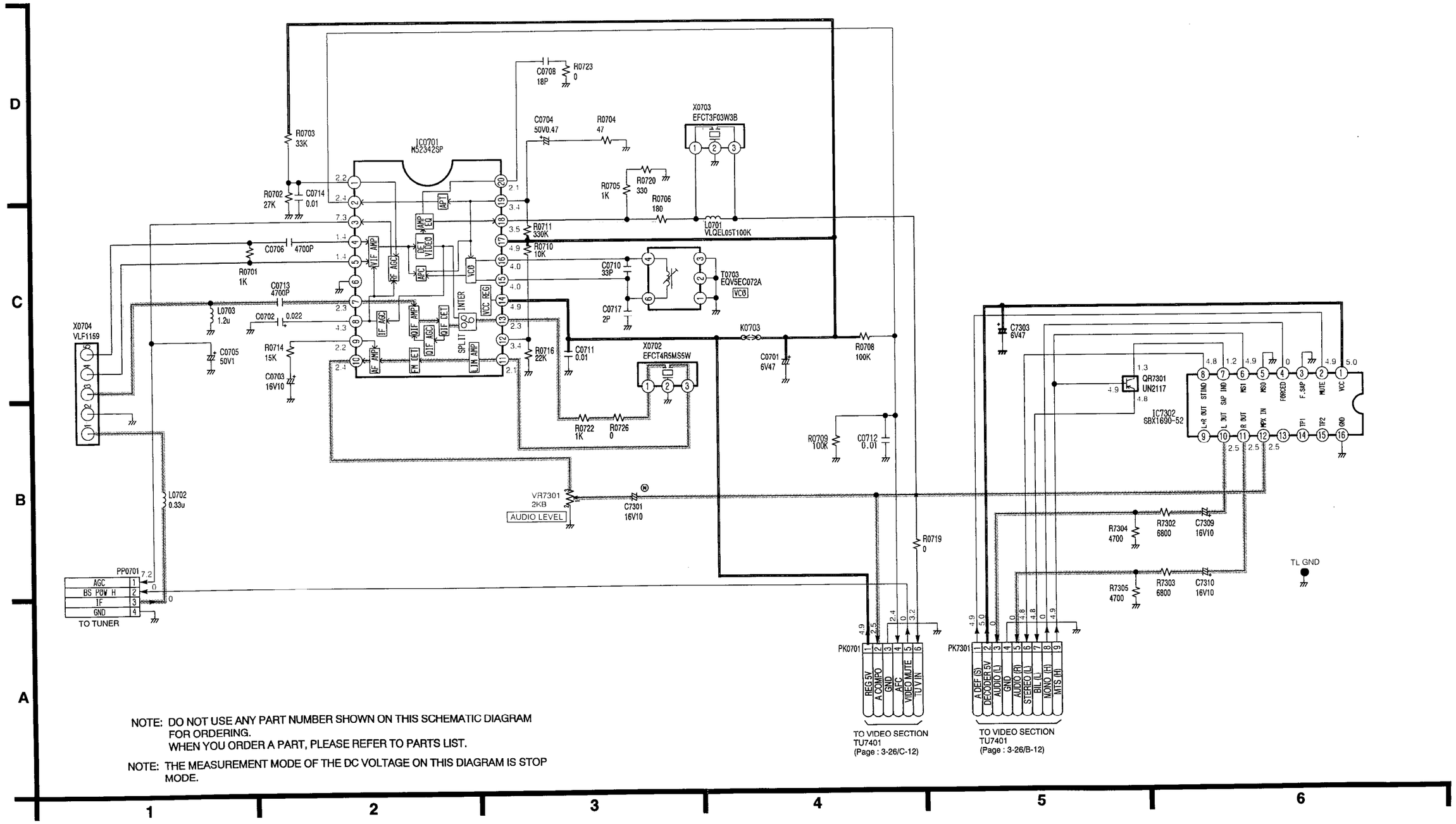
3-17. FRONT JACK C.B.A. (VEP07943A)



3-18. VIF PACK SCHEMATIC DIAGRAM

VIDEO MAIN SIGNAL PATH

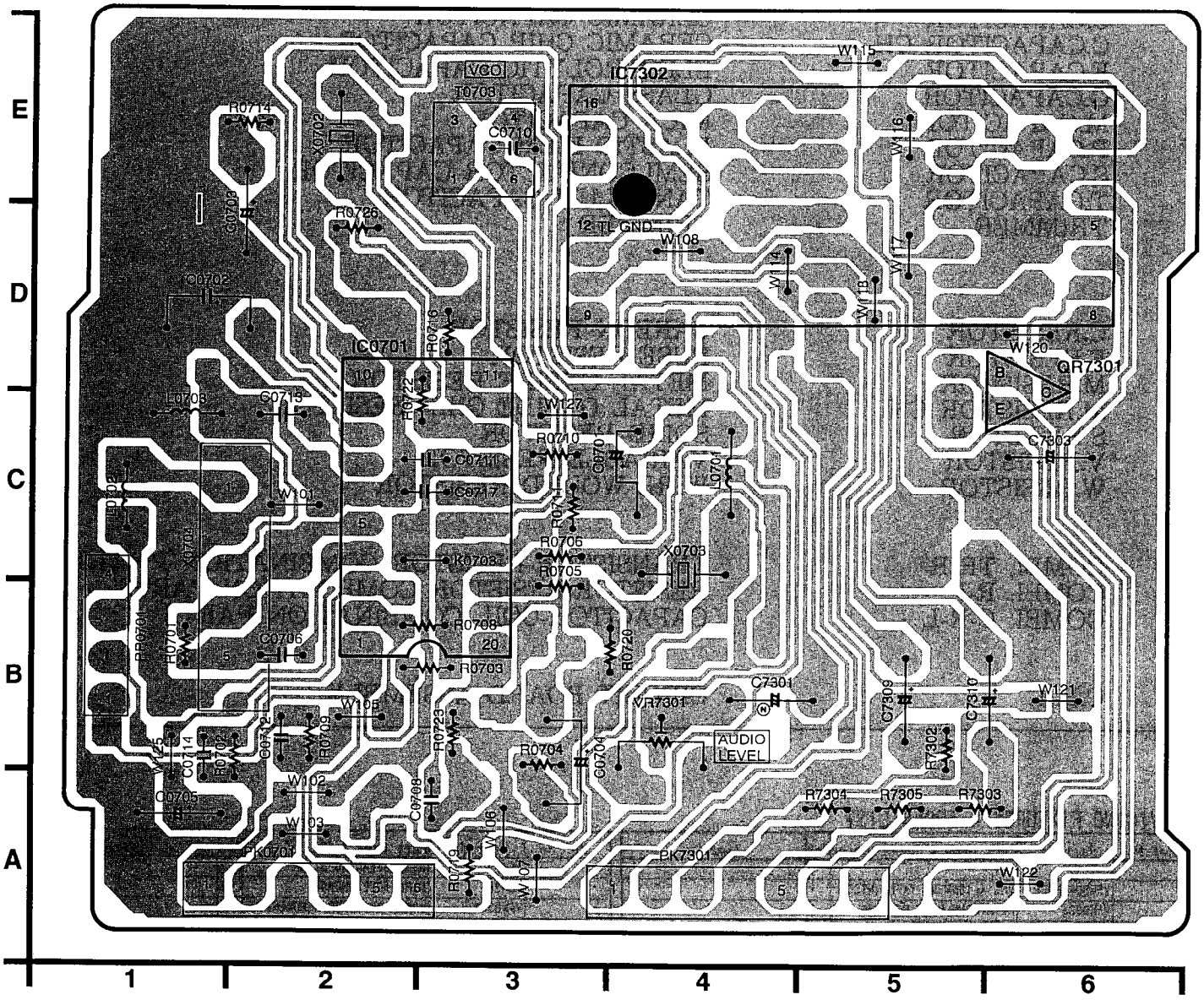
AUDIO MAIN SIGNAL PATH



3-19. VIF PACK C.B.A. (VEP07937B)

VIF PACK C.B.A.					
Transistor & Resistor		Test Land		Connector	
QR7301	D-6	TL GND	E-4	PK0701 PP0701 PK7301	A-2 B-1 A-4
Integrated Circuit		Adjustment			
IC0701 IC7302	C-2 D-5	VR7301	B-4		

ADDRESS INFORMATION



SECTION 4
EXPLODED VIEWS & PARTS LIST
4-1. EXPLODED VIEW MECHANICAL REPLACEMENT PARTS LIST

NOTES

1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified with the mark ⚠ have the special characteristics for saftey. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
   All resistors are in OHMS, K= 1,000 OHMS. All capacitors are in MICROFARADS (uf), P= uuF.
4. The P.C.Board units marked width " ■ " show below the main assembled parts.
5. The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.
6. Abbreviations for parts ;

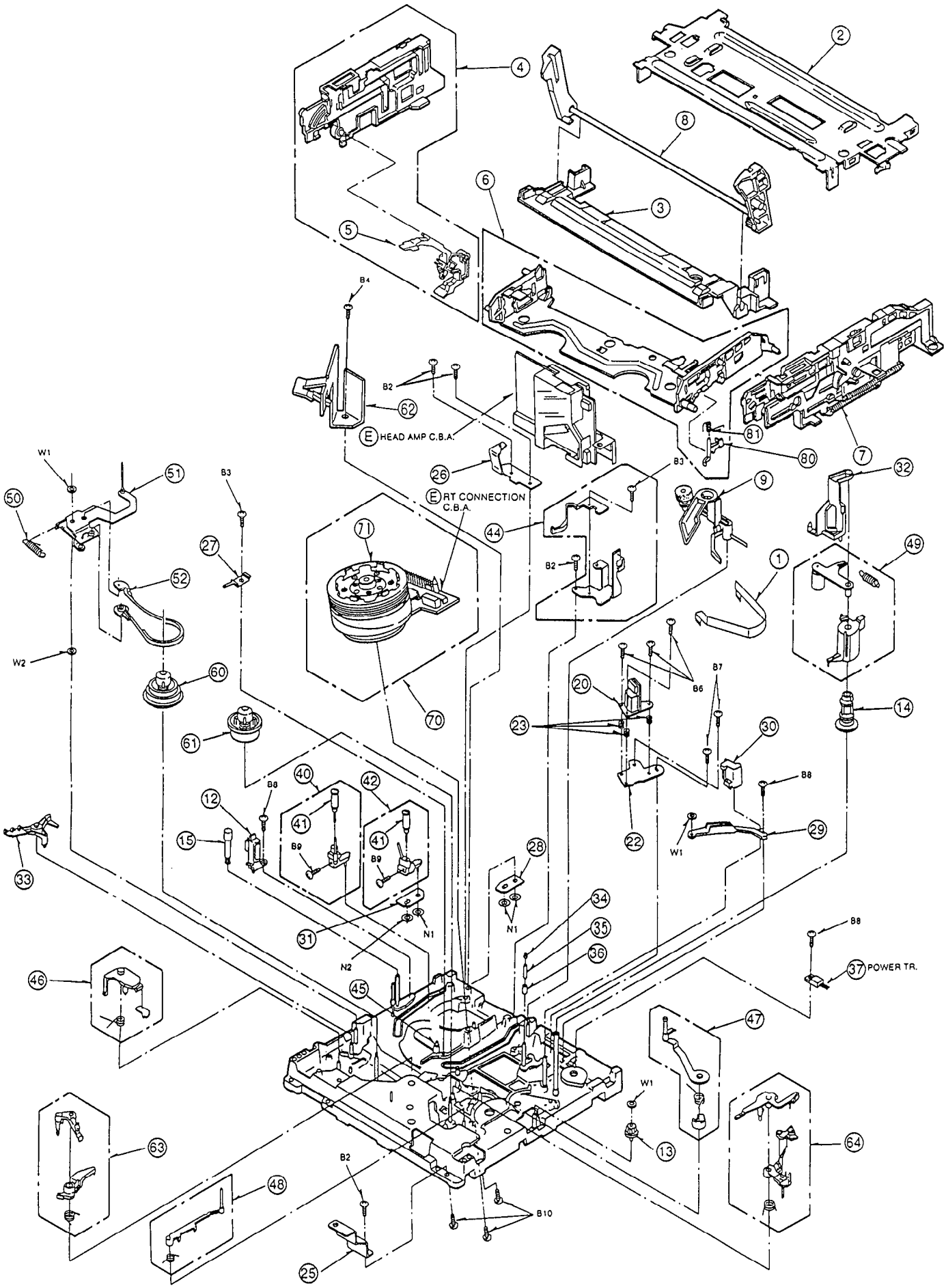
-- NAME --	-- DESCRIPTION --
C.CAPACITOR	CERAMIC CAPACITOR
C.CAPACITOR CH	CERAMIC CHIP CAPACITOR
E.CAPACITOR	ELECTROLYTIC CAPACITOR
G.CAPACITOR	GLASS CAPACITOR
M.CAPACITOR	MICA CAPACITOR
P.CAPACITOR	PLASTIC FILM CAPACITOR
S.CAPACITOR	SEMI-CONDUCTOR CAPACITOR
T.CAPACITOR	TANTALUM CAPACITOR
TRIMMER	TRIMMER
C.RESISTOR	CARBON RESISTOR
F.RESISTOR	FUSE RESISTOR
M.RESISTOR	METAL OXSIDE RESISTOR
M.RESISTOR CH	METAL OXSIDE CHIP RESISTOR
S.RESISTOR	SOLID RESISTOR
V.RESISTOR	VARIABLE RESISTOR
W.RESISTOR	WIRE WOUND RESISTOR
COMBI. TR-R	TRANSISTOR-RESISTOR COMBINATION PARTS
COMBI. R-R	RESISTOR-RESISTOR COMBINATION PARTS
COMBI. C-R-L	CAPACITOR-COIL COMBINATION PARTS
C.B.A.	CIRCUIT BOARD ASSEMBLY

SERVICING FIXTURES & TOOLS LIST

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	VFM8080HQFP	VHS ALIGNMENT TAPE (NTSC)	1	
	VFK0335	RETAINING RING REMOVER	1	
	VFK0329	POST ADJ. SCREW DRIVER	1	
	VFK0326	HEX WRENCH SET	1	
	VFK0132	BACK TENSION METER	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	VFK27	HEAD CLEANING STICK	1	
	MOR265	MORLYTONE GREASE	1	
	VFK0341	UPPER CYLINDER REMOVER	1	
	VFK0680	WHITE GREASE	1	
	VFK0851	STATOR CENTERING TOOL	1	
	VFK0330	FINE ADJ. GEAR DRIVER	1	

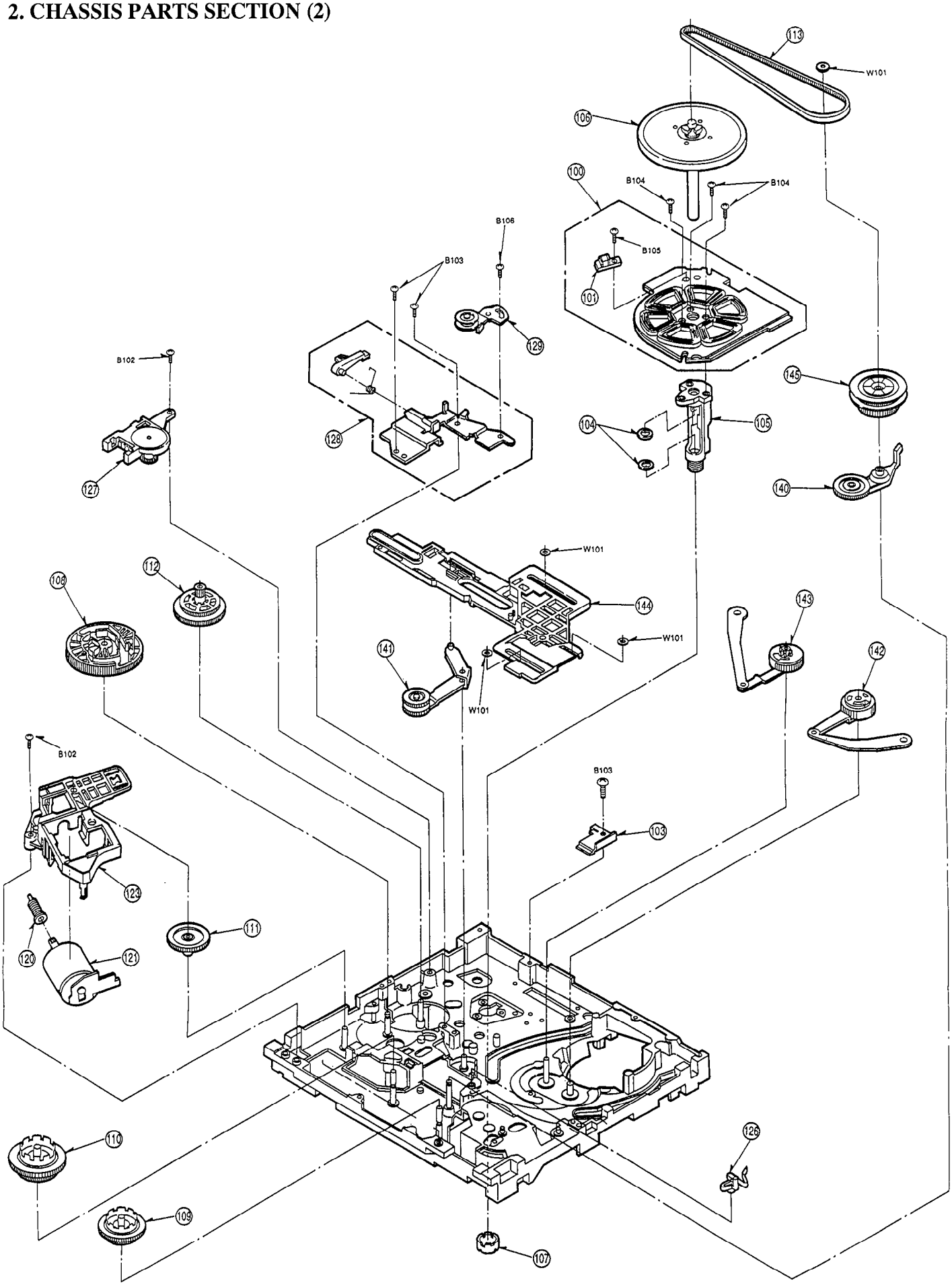
1. CHASSIS PARTS SECTION (1)



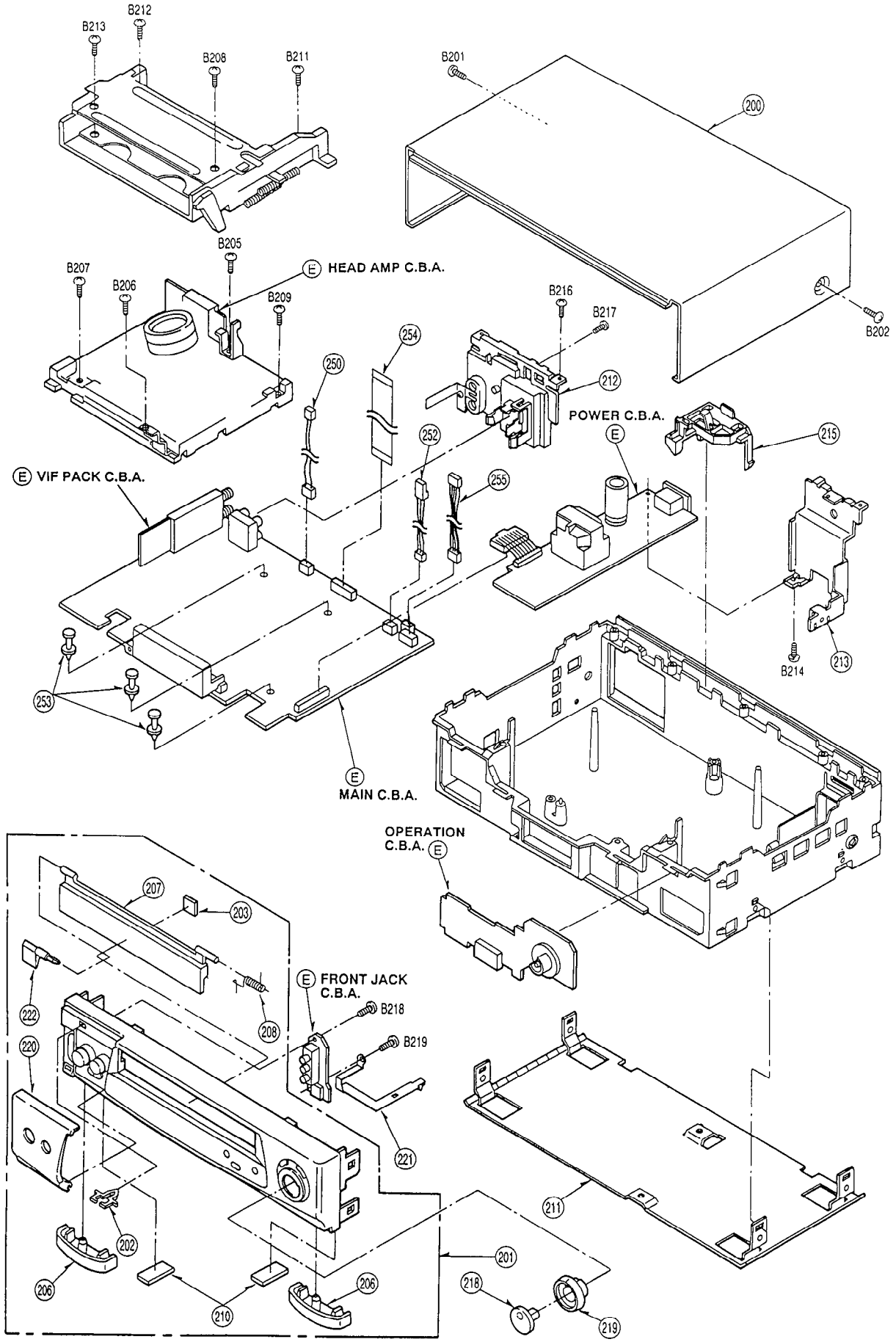
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1(1)	VWJ0758	FLEXIBLE CABLE (6P)	1	
2(1)	VMA8644	TOP PLATE	1	
3(1)	VMA8787	CASSETTE GUIDE	1	
4(1)	VXA4660	SIDE PLATE (L) UNIT	1	
5(1)	VXL2250	OPENER LEVER UNIT	1	
6(1)	VXA4661	CASSETTE HOLDER PLATE UNIT	1	
7(1)	VXA4806	SIDE PLATE (R) UNIT	1	
8(1)	VXP1339	MAIN SHAFT UNIT	1	
9(1)	VXL2440	CLEANER ARM UNIT	1	
12(1)	VBS0052	FE HEAD	1	
13(1)	VDG0871	CARRIAGE CONNECTION GEAR	1	
14(1)	VDG0886	PINCH CAM GEAR	1	
15(1)	VXP1402	IMPEDANCE ROLLER UNIT	1	
20(1)	VED0217	A/C HEAD (1) UNIT	1	
22(1)	VMA8624	A/C HEAD BASE	1	
23(1)	VMB2515	A/C HEAD SPRING	3	
25(1)	VMA8761	MOUNT ANGLE	1	
26(1)	VMA9158	HEAD AMP MOUNT ANGLE (L)	1	
27(1)	VMC0917	EARTH SPRING	1	
28(1)	VMA8874	INCLIND BASE HOLDER (S)	1	
29(1)	VMD2078	P5 STOPPER BASE	1	
30(1)	VXA4927	P5 POST STOPPER	1	
31(1)	VMA8873	INCLIND BASE HOLDER (T)	1	
32(1)	VMD2101	OPENER PIECE	1	
33(1)	VML2776	TENSION SPRING ARM	1	
34(1)	VMX1544	P4 UPPER LIMITER	1	
35(1)	VMX2175	P4 SLEEVE	1	
36(1)	VMX2176	P4 LOWER LIMITER	1	
37(1)	2SB1370YD01E	POWER TRANSISTOR	1	
40(1)	VXA5245KIT	INCLINED BASE (S) UNIT	1	
41(1)	VXP1415	ROLLER POST	2	
42(1)	VXA5247KIT	INCLINED BASE (T) UNIT	1	
44(1)	VXA4974	HEAD AMP MOUNT ANGLE (R) U	1	
45(1)	VMS5383	CASSETTE POSITION FIXTURE	1	
46(1)	VXL2310	REVIEW ARM UNIT	1	
47(1)	VXL2306	P5 ARM UNIT	1	
48(1)	VXL2394	TAKE UP TENSION REGULATOR	1	
48(1)	----------	ARM UNIT		
49(1)	VXL2246	PINCH ARM UNIT	1	
50(1)	VMB2434	TENSION SPRING	1	
51(1)	VXL2309	TENSION ARM (1) UNIT	1	
52(1)	VXZ0310	TENSION BAND UNIT	1	
60(1)	VXR0221	SUPPLY REEL TABLE UNIT	1	
61(1)	VXR0237	TAKE-UP REEL TABLE UNIT	1	
62(1)	VXS0241	EARTH PLATE	1	
63(1)	VXZ0312	SUPPLY BRAKE ARM UNIT	1	
64(1)	VXZ0313	TAKE UP BRAKE ARM UNIT	1	
70(1)	VEG1370	CYLINDER UNIT	1	
71(1)	VXP1760	UPPER CYLINDER UNIT	1	
80(1)	VML2680	RELEASE LEVER	1	
81(1)	VMB2013	RELEASE SPRING	1	
B2(1)	XTV26+6F	SCREW	4	
B3(1)	XTV26+4F	SCREW	2	
B4(1)	XTN3+8FFZ	SCREW	1	
B6(1)	VHD0762	SCREW	3	
B7(1)	XTV26+6FZ	SCREW	2	
B8(1)	XTV26+8F	SCREW	3	
B9(1)	XQN2+AJ4	SCREW	2	
B10(1)	VHD0342	SCREW	3	
N1(1)	VHN0192	NUT	3	
N2(1)	VHN0193	NUT	1	
W1(1)	VMX2208	WASHER	3	
W2(1)	XWGV26D5G	WASHER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
100(2)	VEK5927	STATOR UNIT	1	
101(2)	VBK0061	FG HEAD	1	
103(2)	VMA8930	ROTOR STOPPER	1	
104(2)	VMX1927	OIL SEAL	2	
105(2)	VXD0140	HOUSING UNIT	1	
106(2)	VXP1519	ROTOR UNIT	1	
107(2)	VXQ0297	THRUST SCREW UNIT	1	
108(2)	VDG0913	MAIN CAM GEAR	1	
109(2)	VDG0956	SUPPLY REEL GEAR	1	
110(2)	VDG0957	TAKE UP REEL GEAR	1	
111(2)	VDG0868	WORM WHEEL GEAR	1	
112(2)	VDG0885	SUB CAM GEAR	1	
113(2)	VDV0235	TIMING BELT	1	
120(2)	VDG0866	WORM GEAR	1	
121(2)	VEM0427	LOADING MOTOR (1) UNIT	1	
123(2)	VMD1942	MOTOR BRACKET	1	
126(2)	VML2725	IDLER CONTROL LEVER	1	
127(2)	VSS0365	MODE SW	1	
128(2)	VXA5138	SS BRAKE BASE UNIT	1	
129(2)	VXA4799	TENSION ROLLER UNIT	1	
140(2)	VXL2378	IDLER ARM UNIT	1	
141(2)	VXL2372	DIRECT LEVER UNIT	1	
142(2)	VXL2299	SUPPLY LOADING ARM UNIT	1	
143(2)	VXL2300	TAKE UP LOADING ARM UNIT	1	
144(2)	VXL2307	MAIN LEVER UNIT	1	
145(2)	VXP1409	CENTRE CLUTCH	1	
B102(2)	XTV26+8F	SCREW	2	
B103(2)	XTV26+6F	SCREW	3	
B104(2)	VHD0753	SCREW	3	
B105(2)	VHD0754	SCREW	1	
B106(2)	XSB26+4FZ	SCREW	1	
W101(2)	VMX2208	WASHER	4	

2. CHASSIS PARTS SECTION (2)



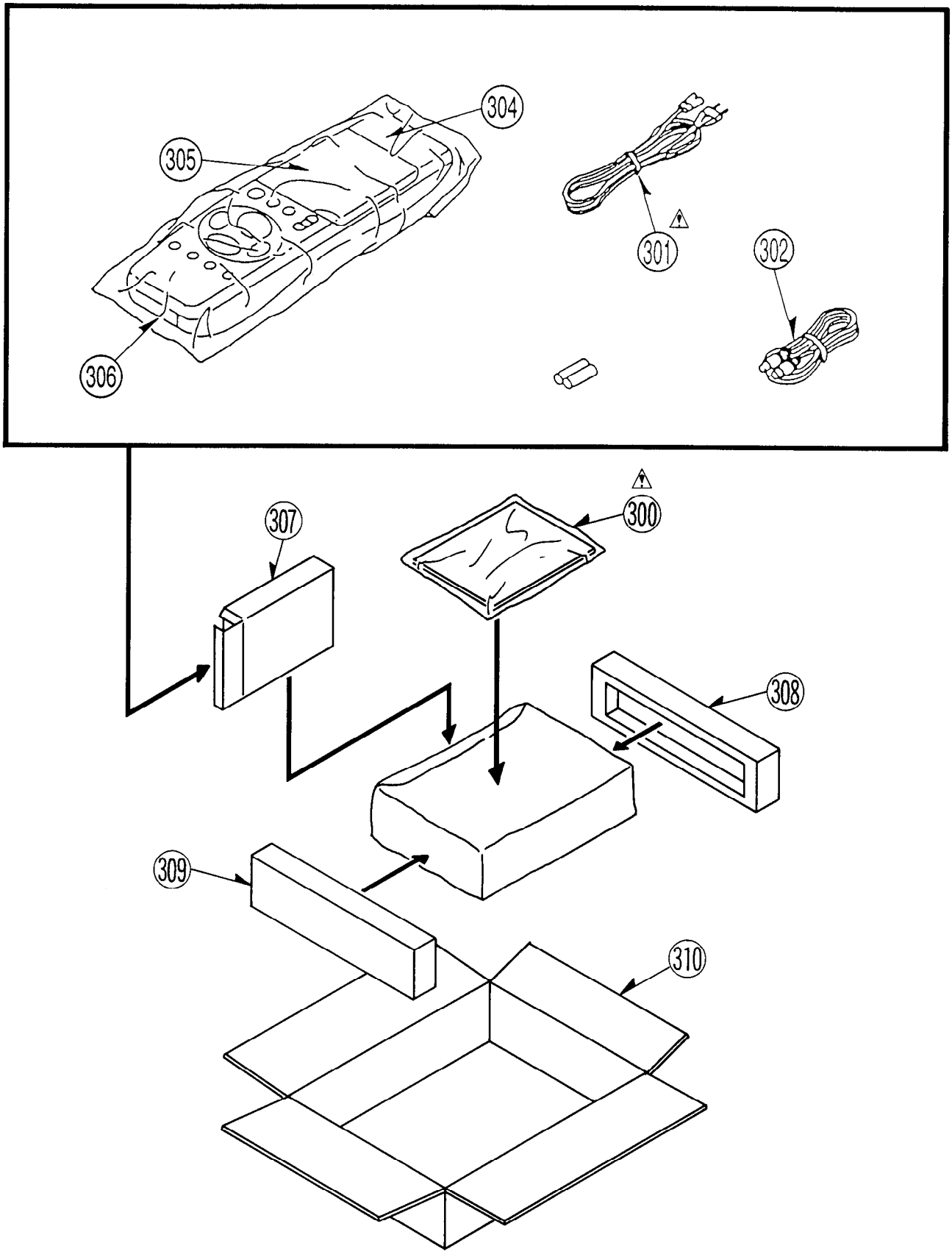
3. CASING PARTS SECTION



Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
200 (3)	VGM1272	TOP PANEL	1	
201 (3)	VYP6246	FRONT PANEL (1) UNIT	1	
202 (3)	VGQ0550	LUTCH	1	
203 (3)	VMT0502	PAD	1	
206 (3)	VKA0192	LEG	1	
207 (3)	VKF2587	BLINDER PANEL	1	
208 (3)	VMB2521	BLINDER SPRING	1	
210 (3)	VKA0122	FOOT	2	
211 (3)	VKU0409	BOTTOM PLATE	1	
212 (3)	VXA5427	ANT JACK BOARD	1	
213 (3)	VMP4593	POWER PLATE	1	
215 (3)	VGQ3743	HEAD AMP C.B.A. HOLDER	1	
218 (3)	VGU6770	JOG DIAL	1	
219 (3)	VGU6883	SHUTTLE RING	1	
220 (3)	VKF2598	DOOR	1	
221 (3)	VMC1073	EARTH SPRING (F)	1	
222 (3)	VDK0148	BLINDER CAM	1	
250 (3)	VEE9221	WIRE CABLE (2P)	1	P4002-FE HEAD
252 (3)	VEE9223	WIRE CABLE (3P)	1	P2502-POWER TR.
253 (3)	VMX2233	G.B.A. SPACER	3	
254 (3)	VWJ0904B	FLAT CARD CABLE	1	P2501-P1507
255 (3)	VEE9706	WIRE CABLE (5P)	1	P2001-P2902
B201-B202	VHD0378	SCREW	2	
B205-B207	VHD0168	SCREW	3	
B208	XTV26+10F	SCREW	1	
B209	VHD0874	SCREW	1	
B211-B213	XTV26+8FR	SCREW	3	
B214	VHD0418	SCREW	1	
B216	VHD0773	SCREW	1	
B217	XSN3+10FZ	SCREW	1	
B218-B219	XTN26+8GR	SCREW	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
⚠300 (4)	VQT6643	OPERATING INSTRUCTIONS	1	
⚠301 (4)	VJA0488	AC CORD	1	
302 (4)	VJA0812	CABLE	1	
304 (4)	VEQ1883	REMOTE CONTROLLER	1	
305 (4)	VGP3632	DOOR PANEL	1	
306 (4)	VKF2115	BATTERY COVER	1	
307 (4)	VPK1726	ACCESSORY BOX	1	
308 (4)	VPN4139	CUSHION (R)	1	
309 (4)	VPN4476	CUSHION (L)	1	
310 (4)	VPG8691	PACKING CASE	1	

4. PACKING PARTS SECTION



4-2. ELECTRICAL REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
■	VEP07943A	P. C. BOARD W/COMPONENT	1	(RTL)
		FRONT JACK		
⚠ ■	VEP01627D	P. C. BOARD W/COMPONENT	1	(RTL)
		POWER		
■	VEP05331A	P. C. BOARD W/COMPONENT	1	(RTL)
		HEAD AMP		
■	VEP06B35M	P. C. BOARD W/COMPONENT	1	(RTL) INCLUDING THE
		MAIN		TV DEMODULATOR PACK C. B. A.
■	VEP07937F	P. C. BOARD W/COMPONENT		(RTL) INCLUDED IN
		TV DEMODULATOR PACK		MAIN C. B. A.
■	VEP07942X/B	P. C. BOARD W/COMPONENT	1	(RTL)
		OPERATION		
■	VEX0129	P. C. BOARD W/COMPONENT	1	(RTL)
		CYLINDER DRIVE		

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
■	VEP07943A	P. C. BOARD W/COMPONENT	1	(RTL)
		FRONT JACK		
P6601	VJS3633B005	CONNECTOR (FEMALE)	1	
R6605	ERDS2TJ750	C. RESISTOR 1/4W 75	1	
■	VEP01627D	P. C. BOARD W/COMPONENT	1	(RTL)
		POWER		
C1101	ECQU2A333MN	P. CAPACITOR 100V 0.033U	1	
⚠ C1102	ECKMWS102MEH	C. CAPACITOR 1000V	1	
C1103	ECQU2A333MN	P. CAPACITOR 100V 0.033U	1	
⚠ C1104	ECKMWS102MEH	C. CAPACITOR 1000V	1	
C1105	ECA2EGE101W	E. CAPACITOR 250V 100U	1	
C1106	ECKD2H471KB5	C. CAPACITOR 500V 470P	1	
C1107	ECQB1H103JF	P. CAPACITOR 50V 0.01U	1	
C1108	ECEA1CGE101	E. CAPACITOR 16V 100U	1	
C1109	ECQV1H104JM	P. CAPACITOR 50V 0.1U	1	
C1110	ECQB1H182JF	P. CAPACITOR 50V 1800P	1	
C1111	VCK0046	C. CAPACITOR	1	
C1112	ECQB1H103JF	P. CAPACITOR 50V 0.01U	1	
C1116	ECEA1HFE560	E. CAPACITOR 50V 56U	1	
C1117	EEUFA1C681	E. CAPACITOR 16V 680U	1	
C1118	EEUFA1A681L	E. CAPACITOR 10V 680U	1	
C1119	ECEA1VFE820	E. CAPACITOR 35V 82U	1	
C1120	ECA0JFQ331	E. CAPACITOR 6.3V 330U	1	
C1121	VCK0266K182	C. CAPACITOR 500V 1800P	1	
C1124	ECEA1EGE221	E. CAPACITOR 25V 220U	1	
C1128	ECEA1AGE221	E. CAPACITOR 10V 220U	1	
C1129	ECCD2H101J	C. CAPACITOR 500V 100P	1	
⚠ D1101	S1WBA60S	DIODE	1	
D1102	1SS254	DIODE	1	
D1103	VSD0002	DIODE	1	
D1104	AU01Z	DIODE	1	
D1105	MA4130L	DIODE	1	
D1106	1SS254	DIODE	1	
D1107	MA178	DIODE	1	
D1108	AU01Z	DIODE	1	
D1109	AK06V2	DIODE	1	
D1110	11EQS04	DIODE	1	
D1111	MA185	DIODE	1	
D1112	ERA22-02	DIODE	1	
D1113	MA2470-L	DIODE	1	
D1114	MA4056-H	DIODE	1	
D1115	1SS254	DIODE	1	
D1118	1SS254	DIODE	1	
D1126	AK06V2	DIODE	1	
⚠ F1101	XBA1G16NU100	FUSE	1	
L1101	ELF16M070A	COIL 7UH	1	
L1102	VLP0085	FILTER	1	
L1103	ELF16M070A	COIL 7UH	1	
L1104	VLQ0579	COIL	1	
L1106	VLQ0558K220	COIL 22UH	1	
P1101	VJS2985	CONNECTOR (FEMALE)	1	
P1102	VJP3631A011W	CONNECTOR (MALE)	1	
⚠ Q1101	2SC4953VT	TRANSISTOR	1	
Q1102, 03	2SD1996-S	TRANSISTOR	2	
Q1104	PS2561L1	PHOTO CUPPER	1	
Q1105-07	2SC1740S	TRANSISTOR	3	
Q1108	2SD2139	TRANSISTOR	1	
Q1109	2SC1740S	TRANSISTOR	1	
R1101	ERDS2FJ333	C. RESISTOR 1/4W 33K	1	
R1103, 04	ERDS2FJ154	C. RESISTOR 1/4W 150K	2	
R1105	ERDS2FJ103	C. RESISTOR 1/4W 10K	1	
R1106	ERG12ZGK685	S. RESISTOR 1/2W 6.8M	1	
R1107	ERG2SJ470	M. RESISTOR 2W 47	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R1108	ERDS2FJ332	C. RESISTOR 1/4W 3.3K	1	
R1109	ERDS1TJ221	C. RESISTOR 1/2W 220	1	
R1110	EROS2CK68201	M. RESISTOR 1/4W 8.2K	1	
R1111	ERDS2FJ330	C. RESISTOR 1/4W 33	1	
R1112	ERDS2FJ474	C. RESISTOR 1/4W 470K	1	
R1113	ERDS2FJ221	C. RESISTOR 1/4W 220	1	
R1114	ERDS2FJ474	C. RESISTOR 1/4W 470K	1	
R1115	ERDS1TJ563	C. RESISTOR 1/2W 56K	1	
R1116	ERDS2TJ122	C. RESISTOR 1/4W 1.2K	1	
R1117	ERDS2TJ331	C. RESISTOR 1/4W 330	1	
R1118	ERDS2TJ391	C. RESISTOR 1/4W 390	1	
R1119	ERDS2TJ151	C. RESISTOR 1/4W 150	1	
R1120	VSF0055	FUSE	1	
R1121	ERDS2TJ221	C. RESISTOR 1/4W 220	1	
R1122	ERDS1TJ472	C. RESISTOR 1/2W 4.7K	1	
⚠T1101	VLT0744	TRANSFORMER	1	
		MISCELLANEOUS		
	VHD0418	SCREW	1	
	VMP4594	POWER PLATE	1	
	XSN3+8FZ	SCREW	2	
	XTV4+8F	SCREW	1	
	XWC4B	WASHER	1	
■	VEP05331A	P. C. BOARD W/COMPONENT	1	(RTL)
		HEAD AMP		
C501	ECEA0JKA221	E. CAPACITOR 6.3V 220U	1	
C502	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C503-06	ECUM1H223KBN	C. CAPACITOR CH 50V 0.022U	4	
C507	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C509-11	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	3	
C513, 14	ECUM1H102KBN	C. CAPACITOR CH 50V 1000P	2	
C516	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C517	ECUM1H270JCN	C. CAPACITOR CH 50V 27P	1	
C518	ECUM1H561JCN	C. CAPACITOR CH 50V 560P	1	
C519	ECUM1H680JCN	C. CAPACITOR CH 50V 68P	1	
C520	ECUM1H561JCN	C. CAPACITOR CH 50V 560P	1	
C521	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C522, 23	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	2	
C551	VCEA0JAC221	E. CAPACITOR 6.3V 220U	1	
C552	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C555	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C556, 57	ECUM1H471JCN	C. CAPACITOR CH 50V 470P	2	
C558-60	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	3	
C561	ECEA1HKA3R3	E. CAPACITOR 50V 3.3U	1	
C562	ECUM1H681JCN	C. CAPACITOR CH 50V 680P	1	
C563	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
IC501	AN3366SB	IC	1	
L501, 02	VLQ0633J680	COIL	2	
L503	VLQ0633J121	COIL	1	
L504	VLQ0633J680	COIL	1	
L551	VLQ0633J680	COIL	1	
LB501-04	VLP0145	COIL	4	
P501	VJS3649B020	CONNECTOR (FEMALE)	1	
P502	VJS3632	CONNECTOR (FEMALE)	1	
P503	VJS2331	CONNECTOR (FEMALE)	1	
P504	VJS3646B006	CONNECTOR (FEMALE)	1	
Q501	MSD601	TRANSISTOR	1	
Q502	MSC2295	TRANSISTOR	1	
QR502, 03	MUN2213	TRANSISTOR-RESISTOR	2	
QR551	MUN2213	TRANSISTOR-RESISTOR	1	
R501, 02	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	2	
R503	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R506	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R510	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R511	ERJ6GMYG822	M. RESISTOR CH 1/10W 8.2K	1	
R512	ERJ6RBD561	M. RESISTOR CH 1/10W 560	1	
R513	ERJ6RBD302	M. RESISTOR CH 1/10W 3K	1	
R514	ERJ6RBD102	M. RESISTOR CH 1/10W 1K	1	
R515, 16	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	2	
R517	ERJ6GMYG471	M. RESISTOR CH 1/10W 470	1	
R518, 19	ERJ6RBD152	M. RESISTOR CH 1/10W 1.5K	2	
R520	ERJ6RBD271	M. RESISTOR CH 1/10W 270	1	
R521	ERJ6RBD332	M. RESISTOR CH 1/10W 3.3K	1	
R522	ERJ6GMYG271	M. RESISTOR CH 1/10W 270	1	
R551	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R552	ERJ6RED150	M. RESISTOR CH 1/10W 15	1	
R553	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
W51-64	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	14	
		MISCELLANEOUS		
	VSC4171	SHIELD CASE (REAR)	1	
	VSC4172	SHIELD CASE (BOTTOM)	1	
■	VEP06B35M	P. C. BOARD W/COMPONENT	1	(RTL)
		MAIN		
■	VEP07937F	P. C. BOARD W/COMPONENT		
		TV DEMODULATOR PACK		
B7501	CR2354-1GUF	BATTERY	1	
C0701	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C0702	ECEA1HKA0R1	P. CAPACITOR 50V 0.1U	1	
C0703	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C0704	ECEA1HKAR47	E. CAPACITOR 50V 0.47U	1	
C0705	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C0706	ECUX1H472KBV	C. CAPACITOR CH 50V 4700P	1	
C0708	ECUX1H180JCV	C. CAPACITOR CH 50V 18P	1	
C0710	ECUX1H330JPV	C. CAPACITOR CH 50V 33P	1	
C0711	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C0712	ECUX1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C0713	ECUX1H472KBV	C. CAPACITOR CH 50V 4700P	1	
C0714	ECUX1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C0717	ECUM1H020CCN	C. CAPACITOR CH 50V 2P	1	
C2001	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C2002	ECUX1E104ZFV	C. CAPACITOR CH 25V 0.1U	1	
C2003	ECEA1HKNR47	E. CAPACITOR 50V 0.47U	1	
C2005	ECUM1H102KBN	C. CAPACITOR CH 50V 1000P	1	
C2008	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C2009	ECUM1H392KBN	C. CAPACITOR CH 50V 3900P	1	
C2011	ECUM1H472KBN	C. CAPACITOR CH 50V 4700P	1	
C2012	ECEA1EKA4R7	E. CAPACITOR 25V 4.7U	1	
C2013	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C2014	ECEA0JKA221	E. CAPACITOR 6.3V 220U	1	
C2015	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C2016	ECEA0JKA221	E. CAPACITOR 6.3V 220U	1	
C2017	ECUM1H222KBN	C. CAPACITOR CH 50V 2200P	1	
C2018	ECQV1H563B4	P. CAPACITOR 50V 0.056U	1	
C2019	ECUM1H563ZFN	C. CAPACITOR CH 50V 0.056U	1	
C2501	ECEA1HKA2R2	E. CAPACITOR 50V 2.2U	1	
C2502	ECEA1CKA470	E. CAPACITOR 16V 47U	1	
C2503	ECEA1HKA2R2	E. CAPACITOR 50V 2.2U	1	
C2504	ECEA1HKNR22	E. CAPACITOR 50V 0.22U	1	
C2505	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C2506, 07	ECUM1E333KBN	C. CAPACITOR CH 25V 0.033U	2	
C2508	ECUM1H103KBN	C. CAPACITOR CH 50V 0.01U	1	
C2510	ECQV1H563B4	P. CAPACITOR 50V 0.056U	1	
C2511	ECUM1H563ZFN	C. CAPACITOR CH 50V 0.056U	1	
C2512-14	ECUM1E333KBN	C. CAPACITOR CH 25V 0.033U	3	
C2515	ECEA1HKA2R2	E. CAPACITOR 50V 2.2U	1	
C3003	ECUM1H103KBN	C. CAPACITOR CH 50V 0.01U	1	
C3004	ECUM1H070DCN	C. CAPACITOR CH 50V 7P	1	
C3005	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3006	ECUM1H151JCN	C. CAPACITOR CH 50V 150P	1	
C3007	ECUX1E104ZFV	C. CAPACITOR CH 25V 0.1U	1	
C3008	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C3009	ECUM1H070DCN	C. CAPACITOR CH 50V 7P	1	
C3010, 11	ECUM1H820JCN	C. CAPACITOR CH 50V 82P	2	
C3012	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C3013	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3014	ECEA1HKA3R3	E. CAPACITOR 50V 3.3U	1	
C3015	ECUM1H181JCN	C. CAPACITOR CH 50V 180P	1	
C3016	ECUM1H330JCN	C. CAPACITOR CH 50V 33P	1	
C3017	ECUM1H220JCN	C. CAPACITOR CH 50V 22P	1	
C3018	ECEA1HKAR47	E. CAPACITOR 50V 0.47U	1	
C3019	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	1	
C3020	ECEA1HKAR22	E. CAPACITOR 50V 0.22U	1	
C3021	ECUM1H151JCN	C. CAPACITOR CH 50V 150P	1	
C3022	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C3023	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3024	ECUM1H102KBN	C. CAPACITOR CH 50V 1000P	1	
C3025	ECA0JM471	E. CAPACITOR 6.3V 470U	1	
C3026, 27	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	2	
C3028	ECEA1EKA4R7	E. CAPACITOR 25V 4.7U	1	
C3029	ECUX1E104ZFV	C. CAPACITOR CH 25V 0.1U	1	
C3030	ECUM1E333KBN	C. CAPACITOR CH 25V 0.033U	1	
C3031	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3036	ECUX1E104ZFV	C. CAPACITOR CH 25V 0.1U	1	
C3037	ECUM1H330JCN	C. CAPACITOR CH 50V 33P	1	
C3038	ECEA1HKAR47	E. CAPACITOR 50V 0.47U	1	
C3039	ECUM1H152JCN	C. CAPACITOR CH 50V 1500P	1	
C3040	ECUM1H270JCN	C. CAPACITOR CH 50V 27P	1	
C3041	ECA0JM471	E. CAPACITOR 6.3V 470U	1	
C3042, 43	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	2	
C3044	ECUM1H223KBN	C. CAPACITOR CH 50V 0.022U	1	
C3045	ECEA1HKAR47	E. CAPACITOR 50V 0.47U	1	
C3046	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3048	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C3049	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3050	ECA0JM471	E. CAPACITOR 6.3V 470U	1	
C3051	ECEA1HKAR22	E. CAPACITOR 50V 0.22U	1	
C3052	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C3053	ECEA1HKAR47	E. CAPACITOR 50V 0.47U	1	
C3054	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C3055	ECEA1EKA4R7	E. CAPACITOR 25V 4.7U	1	
C3056	ECEA1HKA3R3	E. CAPACITOR 50V 3.3U	1	
C3057	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C3058	ECEA1HKAR47	E. CAPACITOR 50V 0.47U	1	
C3059	ECEA1HKA3R3	E. CAPACITOR 50V 3.3U	1	
C3060	ECUM1H121JCN	C. CAPACITOR CH 50V 120P	1	
C3061	ECUM1E473KBN	C. CAPACITOR CH 25V 0.047U	1	
C3062	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C3063	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3065	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3066	ECUM1H220JCN	C. CAPACITOR CH 50V 22P	1	
C3067	ECUM1H180JCN	C. CAPACITOR CH 50V 18P	1	
C3068	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C3069	ECUM1H681JCN	C. CAPACITOR CH 50V 680P	1	
C3070	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	1	
C3071	ECUM1H680JCN	C. CAPACITOR CH 50V 68P	1	
C3072-74	ECUM1H330JCN	C. CAPACITOR CH 50V 33P	3	
C3075	ECUM1H120JCN	C. CAPACITOR CH 50V 12P	1	
C3076, 77	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	2	
C3079	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C3080	ECUX1E104ZFV	C. CAPACITOR CH 25V 0.1U	1	
C3081	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
C3096	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C3103	ECUM1H121JCN	C. CAPACITOR CH 50V 120P	1	
C3105	ECUM1H181JCN	C. CAPACITOR CH 50V 180P	1	
C3106-08	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	3	
C3109	ECUM1H102KBN	C. CAPACITOR CH 50V 1000P	1	
C3110	ECEA0JKA221	E. CAPACITOR 6.3V 220U	1	
C3114, 15	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	2	
C3116	ECUM1H221JCN	C. CAPACITOR CH 50V 220P	1	
C4017	ECCF1H221JC	C. CAPACITOR 50V 220P	1	
C4018	ECQB1H223JF	P. CAPACITOR 50V 0.022U	1	
C4019	ECA1CM470	E. CAPACITOR 16V 47U	1	
C4020	ECUM1H223KBN	C. CAPACITOR CH 50V 0.022U	1	
C4021	ECUM1H152KBN	C. CAPACITOR CH 50V 1500P	1	
C4501, 02	VCEA0JAW101	E. CAPACITOR 6.3V 100U	2	
C4503, 04	VCEA1EAW4R7	E. CAPACITOR 25V 4.7U	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C4505	VCEA1CAW100	E. CAPACITOR 16V 10U	1	
C4506	VCEA1EAW4R7	E. CAPACITOR 25V 4.7U	1	
C4507	ECQB1H223JF	P. CAPACITOR 50V 0.022U	1	
C4508	ECQB1H103JF	P. CAPACITOR 50V 0.01U	1	
C4509	VCEA1AAW330	E. CAPACITOR 10V 33U	1	
C4510	VCEA1AAW470	E. CAPACITOR 10V 47U	1	
C4511	ECUM1H223KBN	C. CAPACITOR CH 50V 0.022U	1	
C4512	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
C4513	VCEA1AAW330	E. CAPACITOR 10V 33U	1	
C4514	ECQB1H103JF	P. CAPACITOR 50V 0.01U	1	
C4515	ECQB1H223JF	P. CAPACITOR 50V 0.022U	1	
C4516	VCEA1EAW4R7	E. CAPACITOR 25V 4.7U	1	
C4517	VCEA1CAW100	E. CAPACITOR 16V 10U	1	
C4518	VCEA1EAW4R7	E. CAPACITOR 25V 4.7U	1	
C4519	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C4520, 21	ECUM1H152KBN	C. CAPACITOR CH 50V 1500P	2	
C4551	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C4591	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C4601	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C4602	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C4603	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C4604	ECEA1AKA330	E. CAPACITOR 10V 33U	1	
C4605	ECUM1H103KBN	C. CAPACITOR CH 50V 0.01U	1	
C4606	ECUM1H182KBN	C. CAPACITOR CH 50V 1800P	1	
C4607	ECUM1H332KBN	C. CAPACITOR CH 50V 3300P	1	
C4608	ECUM1H103KBN	C. CAPACITOR CH 50V 0.01U	1	
C4609	ECUM1H122KBN	C. CAPACITOR CH 50V 1200P	1	
C4610	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C6002	ECEA1CKA470	E. CAPACITOR 16V 47U	1	
C6003	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C6005	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C6006	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C6007, 08	ECUM1H180JCN	C. CAPACITOR CH 50V 18P	2	
C6010	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C6014	ECEA1HKA3R3	E. CAPACITOR 50V 3.3U	1	
C6018	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C6019	ECUM1C224ZFN	C. CAPACITOR CH 16V 0.22U	1	
C6020	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7301	ECEA1CKN100	E. CAPACITOR 16V 10U	1	
C7303	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C7309, 10	ECEA1CKA100	E. CAPACITOR 16V 10U	2	
C7401	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C7403	ECA1CM471	E. CAPACITOR 16V 470U	1	
C7404	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7406	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C7407	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7502	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7503, 04	ECUM1H270JCN	C. CAPACITOR CH 50V 27P	2	
C7505	ECUM1H100DCN	C. CAPACITOR CH 50V 10P	1	
C7506	ECUM1H390JCN	C. CAPACITOR CH 50V 39P	1	
C7507	ECUM1H222KBN	C. CAPACITOR CH 50V 2200P	1	
C7508	ECEA0JKA331	E. CAPACITOR 6.3V 330U	1	
C7510	ECUM1H391JCN	C. CAPACITOR CH 50V 390P	1	
C7511	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C7702	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C7703	ECUM1H300JCN	C. CAPACITOR CH 50V 30P	1	
C7704	ECUM1H100DCN	C. CAPACITOR CH 50V 10P	1	
C7705	ECEA1HKA2R2	E. CAPACITOR 50V 2.2U	1	
C7706-08	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	3	
C7709	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
C7711	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7712	ECA0JM331	E. CAPACITOR 6.3V 330U	1	
D1501	LN59LT. VT	DIODE	1	
D2001, 02	1SS254	DIODE	2	
D2003	MA153	DIODE	1	
D2501	11ES1	DIODE	1	
D3001	1SS254	DIODE	1	
D3003	MA4056-H	DIODE	1	
D4501	1SS254	DIODE	1	
D4591, 92	1SS254	DIODE	2	
D6003	11ES1	DIODE	1	
D7402	MA4300-M	DIODE	1	
D7501	MA4075	DIODE	1	
D7502, 03	RB441PT-77	DIODE	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
D7504	MA700	DIODE	1	
D7509	1SS254	DIODE	1	
D7511-13	1SS254	DIODE	3	
D7703	RB441PT-77	DIODE	1	
DP7501	VSL0338	LIQUID GRYSTAL DISPLAY	1	
IC0701	M52761SP	IC	1	
IC1501, 02	ON1387	PHOTO INTARAPUTER	2	
IC2501	BA6871BS	IC	1	
IC3001	HA118201GF	Y/C IC	1	
IC3002	MN3880S	CCD IC	1	
IC3005	BA7654F	IC	1	
IC4501	BH7775K	IC	1	
IC4601	BA7755AF	IC	1	
IC6001	M37776V1BV	IC	1	
IC6002	BA6887-V3	IC	1	
IC6003	PST993D	IC	1	
IC7302	SBX1690-52	IC	1	
IC7501	M37507V6AG	IC	1	
IC7701	D6464WVAG	IC	1	
IC7702	BA10393F	IC	1	
K0703	ERJ6GEY0R00	M. RESISTOR CH 1/10W 0	1	
K3011	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K4007	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K6001, 02	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	2	
K7503	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K7507	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K7512	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K7514	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
L0701	VLQEL05S100K	COIL 10UH	1	
L0702	VLQ0163JR33	COIL 0.33UH	1	
L0703	VLQ0163J1R2	COIL 1.2UH	1	
L3001	VLQ0633J560	COIL	1	
L3002	VLQ0633J680	COIL	1	
L3003	VLQ0633J221	COIL	1	
L3004, 05	VLQ0633J680	COIL	2	
L3006	VLQ0633J120	COIL	1	
L3007	VLQ0633J390	COIL	1	
L3008, 09	VLQ0633J680	COIL	2	
L3011	VLQ0633J220	COIL	1	
L3012	VLQ0633J101	COIL	1	
L3013	VLQ0633J390	COIL	1	
L3014	VLQ0633J120	COIL	1	
L3015, 16	VLQ0633J150	COIL	2	
L3017	VLQ0633J100	COIL	1	
L3018	VLQ0211J100	COIL 10UH	1	
L3019	VLQ0633J560	COIL	1	
L3020	VLQ0633J331	COIL	1	
L3021	VLQ0633J560	COIL	1	
L4001	ELESE471KA	COIL 470UH	1	
L7403	VLQ0633J330	COIL	1	
L7405	VLQ0633J101	COIL	1	
L7701	VLQ0633J1R5	COIL	1	
L7702	VLQ0633J330	COIL	1	
L7704	VLQ0633J680	COIL	1	
LB3001	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
LB3002	VLP0145	COIL	1	
P1001	VJS3631E011A	CONNECTOR (FEMALE)	1	
P1501	VJS3821	CONNECTOR (FEMALE)	1	
P1502	VJS3640A002	CONNECTOR (FEMALE)	1	
P2001	VJP1232T	CONNECTOR (MALE) 5P	1	
P2501	VJS3537A015G	CONNECTOR (FEMALE)	1	
P2502	VJP3502	CONNECTOR (MALE)	1	
P3001	VJP3649E020W	CONNECTOR (MALE)	1	
P3003	VJP3633B005	CONNECTOR (MALE) 5P	1	
P4001	TJS118601T	CONNECTOR	1	
P4002	VJP3646E006	CONNECTOR (MALE)	1	
P7501	VJP3630E014G	CONNECTOR (MALE) 14P	1	
PK0701	VJR0826E006W	CONNECTOR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
PK7301	VJR0826E009W	CONNECTOR	1	
PP0701	VJP3589E004B	CONNECTOR (MALE)	1	
Q1501, 02	PN205LT-NCVT	PHOTO TRANSISTOR	2	
Q3001	2SD1996	TRANSISTOR	1	
Q3002	MSD601	TRANSISTOR	1	
Q3003, 04	MSB709	TRANSISTOR	2	
Q3005	MSC2295	TRANSISTOR	1	
Q3006	MSD601	TRANSISTOR	1	
Q3007, 08	MSC2295	TRANSISTOR	2	
Q3009	MSD601	TRANSISTOR	1	
Q3010	MSC2295	TRANSISTOR	1	
Q3011	2SA1022	TRANSISTOR	1	
Q3012	MSD601	TRANSISTOR	1	
Q3014	MSB709	TRANSISTOR	1	
Q4001	2SD602-R	TRANSISTOR	1	
Q4501	2SD1468T93	TRANSISTOR	1	
Q4502	2SA1515T93	TRANSISTOR	1	
Q4551	MSD601	TRANSISTOR	1	
Q4591	MSD601	TRANSISTOR	1	
Q6001	MSB709-R	TRANSISTOR	1	
Q6004	MSB709	TRANSISTOR	1	
Q7401	2SD1996-R	TRANSISTOR	1	
QR1001	MUN2211	TRANSISTOR	1	
QR2001	MUN2213	TRANSISTOR-RESISTOR	1	
QR3014	MUN2213	TRANSISTOR-RESISTOR	1	
QR3016, 17	MUN2213	TRANSISTOR-RESISTOR	2	
QR4591	XN1215	TRANSISTOR-TRANSISTOR	1	
QR4593	MUN2113	TRANSISTOR	1	
QR6001	XN1211	TRANSISTOR-RESISTOR	1	
QR7301	UN2117	TRANSISTOR-RESISTOR	1	
QR7501	MUN2213	TRANSISTOR-RESISTOR	1	
QR7702	DTA113TKA	TRANSISTOR-RESISTOR	1	
QR7703	MUN2113	TRANSISTOR	1	
QR7704	MUN2213	TRANSISTOR-RESISTOR	1	
R0701	ERJ3GEYJ102	M. RESISTOR CH 1/16W 1K	1	
R0702	ERJ3RBD273	M. RESISTOR CH 3W 27K	1	
R0703	ERJ6RBD363	M. RESISTOR CH 1/10W 36K	1	
R0704	ERJ3GEYJ470	M. RESISTOR CH 1/16W 47	1	
R0705	ERJ3GEYJ102	M. RESISTOR CH 1/16W 1K	1	
R0706	ERJ3GEYJ181	M. RESISTOR CH 1/16W 180	1	
R0708	ERJ6GEYG104	M. RESISTOR CH 1/10W 100K	1	
R0709	ERJ3GEYJ104	M. RESISTOR CH 1/16W 100K	1	
R0710	ERJ6GEYG103	M. RESISTOR CH 1/10W 10K	1	
R0711	ERJ3GEYJ334	M. RESISTOR CH 1/16W 330K	1	
R0714	ERJ3GEYJ153	M. RESISTOR CH 1/16W 15K	1	
R0716	ERJ3GEYJ223	M. RESISTOR CH 1/16W 22K	1	
R0719	ERJ6GEY0R00	M. RESISTOR CH 1/10W 0	1	
R0720	ERJ3GEYJ331	M. RESISTOR CH 1/16W 330	1	
R0722	ERJ3GEYJ102	M. RESISTOR CH 1/16W 1K	1	
R0723	ERJ3GEY0R00	M. RESISTOR CH 1/16W 0	1	
R0726	ERJ3GEY0R00	M. RESISTOR CH 1/16W 0	1	
R1001	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R2001	ERJ6GMYG392	M. RESISTOR CH 1/10W 3.9K	1	
R2002	ERJ6GMYJ105	M. RESISTOR CH 1/10W 1M	1	
R2003	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R2005	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R2011	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R2012-14	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	3	
R2501	ERJ6GMYG681	M. RESISTOR CH 1/10W 680	1	
R2502	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R2503, 04	ERDS2TJ560	C. RESISTOR 1/4W 56	2	
R2505	ERDS1TJ561	C. RESISTOR 1/2W 560	1	
R2506	ERJ6GMYG432	M. RESISTOR CH 1/10W 4.3K	1	
R2507	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R2508	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R2509	ERJ6GMYJ684	M. RESISTOR CH 1/10W 680K	1	
R2510	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R2511	ERJ6GMYG133	M. RESISTOR CH 1/10W 13K	1	
R2512	ERJ6GMYJ105	M. RESISTOR CH 1/10W 1M	1	
R2513	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R2514	ERDS2TJ560	C. RESISTOR 1/4W 56	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R2515	ERX12SJR47	M. RESISTOR 1/2W 0.47	1	
R3001	ERJ6GMYG561	M. RESISTOR CH 1/10W 560	1	
R3006, 07	ERJ6GMYG681	M. RESISTOR CH 1/10W 680	2	
R3008	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3009, 10	ERJ6GMYG750	M. RESISTOR CH 1/10W 75	2	
R3011	ERJ6GMYG122	M. RESISTOR CH 1/10W 1.2K	1	
R3012	ERJ6GMYG681	M. RESISTOR CH 1/10W 680	1	
R3016	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R3017	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R3018	ERJ6GMYG822	M. RESISTOR CH 1/10W 8.2K	1	
R3019	ERJ6GMYG682	M. RESISTOR CH 1/10W 6.8K	1	
R3020	ERJ6GMYG152	M. RESISTOR CH 1/10W 1.5K	1	
R3022	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R3024	ERJ6GMYG562	M. RESISTOR CH 1/10W 5.6K	1	
R3025	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R3026	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R3028	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R3029	ERJ6GMYG123	M. RESISTOR CH 1/10W 12K	1	
R3030	ERJ6GMYG273	M. RESISTOR CH 1/10W 27K	1	
R3031, 32	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	2	
R3033	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R3034	ERJ6GMYJ391	M. RESISTOR CH 1/10W 390	1	
R3036	ERJ6GMYG122	M. RESISTOR CH 1/10W 1.2K	1	
R3037	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R3038	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R3039	ERJ6GMYG562	M. RESISTOR CH 1/10W 5.6K	1	
R3040	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R3041	ERDS2TJ471	C. RESISTOR 1/4W 470	1	
R3042	ERJ6GMYG471	M. RESISTOR CH 1/10W 470	1	
R3044	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R3045	ERJ6GMYG561	M. RESISTOR CH 1/10W 560	1	
R3046	ERJ6GMYG152	M. RESISTOR CH 1/10W 1.5K	1	
R3047, 48	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	2	
R3049	ERJ6GMYG153	M. RESISTOR CH 1/10W 15K	1	
R3050	ERJ6GMYG123	M. RESISTOR CH 1/10W 12K	1	
R3051-54	ERJ6GMYG681	M. RESISTOR CH 1/10W 680	4	
R3055	ERJ6GMYG121	M. RESISTOR CH 1/10W 120	1	
R3056	ERJ6GMYG681	M. RESISTOR CH 1/10W 680	1	
R3058	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R3059	ERJ6GMYG183	M. RESISTOR CH 1/10W 18K	1	
R3062	ERJ6GMYG182	M. RESISTOR CH 1/10W 1.8K	1	
R3064	ERJ6GMYJ474	M. RESISTOR CH 1/10W 470K	1	
R3066	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3067	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R3068	ERJ6GMYG562	M. RESISTOR CH 1/10W 5.6K	1	
R3069	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R3079	ERJ6GMYJ225	M. RESISTOR CH 1/10W 2.2M	1	
R3080	ERJ6GEYJ395	M. RESISTOR CH 1/10W 3.9M	1	
R3082	ERJ6GMYG114	M. RESISTOR CH 1/10W 110K	1	
R3083	ERJ6GMYJ391	M. RESISTOR CH 1/10W 390	1	
R3084	ERJ6GMYG123	M. RESISTOR CH 1/10W 12K	1	
R3085	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R3088	ERJ6GMYJ124	M. RESISTOR CH 1/10W 120K	1	
R3091	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3093	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R4016	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R4017	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R4018	ERJ6GMYG100	M. RESISTOR CH 1/10W 10	1	
R4037	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R4501. 02	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	2	
R4503-06	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	4	
R4509	ERJ6RBD273	M. RESISTOR CH 1/10W 27K	1	
R4510	ERJ6RBD473	M. RESISTOR CH 1/10W 47K	1	
R4511	ERJ6RBD243	M. RESISTOR CH 1/10W 24K	1	
R4512	ERJ6RBD273	M. RESISTOR CH 1/10W 27K	1	
R4513	ERJ6RBD473	M. RESISTOR CH 1/10W 47K	1	
R4514	ERJ6GMYJ225	M. RESISTOR CH 1/10W 2.2M	1	
R4515, 16	ERDS2TJ471	C. RESISTOR 1/4W 470	2	
R4551	ERJ6GMYG682	M. RESISTOR CH 1/10W 6.8K	1	
R4552	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R4553	ERJ6GMYJ474	M. RESISTOR CH 1/10W 470K	1	
R4591	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R4601	ERJ6GMYJ105	M. RESISTOR CH 1/10W 1M	1	
R4602	ERJ6GMYG822	M. RESISTOR CH 1/10W 8.2K	1	
R4603	ERJ6GMYG123	M. RESISTOR CH 1/10W 12K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R4604	ERJ6GMYG334	M. RESISTOR CH 1/10W 330K	1	
R4605	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R4606	ERJ6GMYG153	M. RESISTOR CH 1/10W 15K	1	
R4607	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R4608	ERJ6GMYG223	M. RESISTOR CH 1/10W 22K	1	
R4609	ERJ6GMYG822	M. RESISTOR CH 1/10W 8.2K	1	
R6001	ERX1SJ1R8	M. RESISTOR 1W 1.8	1	
R6002	ERJ6GMYG913	M. RESISTOR CH 1/10W 91K	1	
R6009	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R6016	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R6017	ERJ6GMYJ105	M. RESISTOR CH 1/10W 1M	1	
R6023, 24	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	2	
R6025, 26	ERJ6GMYG223	M. RESISTOR CH 1/10W 22K	2	
R6027, 28	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	2	
R6030	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R6034	ERJ6GMYJ823	M. RESISTOR CH 1/10W 82K	1	
R6036	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R6037	ERJ6GMYG223	M. RESISTOR CH 1/10W 22K	1	
R6038, 39	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	2	
R6040	ERJ6GMYG333	M. RESISTOR CH 1/10W 33K	1	
R6041	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R6042	ERJ6GMYG183	M. RESISTOR CH 1/10W 18K	1	
R6044, 45	ERJ6GMYG223	M. RESISTOR CH 1/10W 22K	2	
R6046	ERJ6GMYG273	M. RESISTOR CH 1/10W 27K	1	
R6047	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R6048	ERJ6GMYG201	M. RESISTOR CH 1/10W 200	1	
R6050	ERDS2TJ271	C. RESISTOR 1/4W 270	1	
R6051, 52	ERJ6GMYJ683	M. RESISTOR CH 1/10W 68K	2	
R6053	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R6055, 56	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	2	
R6057	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R6058	ERJ6GMYG512	M. RESISTOR CH 1/10W 5.1K	1	
R6059, 60	ERJ6GMYG392	M. RESISTOR CH 1/10W 3.9K	2	
R6061-63	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	3	
R6064	ERJ6RBD751	M. RESISTOR CH 1/10W 750	1	
R6065	ERJ6RHD6980	M. RESISTOR CH 1/10W	1	
R6066	ERJ6GMYG122	M. RESISTOR CH 1/10W 1.2K	1	
R7302. 03	ERJ3GEYG682	M. RESISTOR CH 1/16W 6.8K	2	
R7304, 05	ERJ3GEYG472	M. RESISTOR CH 1/16W 4.7K	2	
R7401	ERDS2TJ152	C. RESISTOR 1/4W 1.5K	1	
R7402, 03	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	2	
R7404	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R7405	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R7407	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R7501	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R7502	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R7503	ERJ6GMYG331	M. RESISTOR CH 1/10W 330	1	
R7504	ERJ6GMYG334	M. RESISTOR CH 1/10W 330K	1	
R7508	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R7510	ECUM1H222KBN	C. CAPACITOR CH 50V 2200P	1	
R7514, 15	ERJ6GMYG223	M. RESISTOR CH 1/10W 22K	2	
R7523	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R7532	ERJ6GMYG153	M. RESISTOR CH 1/10W 15K	1	
R7533, 34	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	2	
R7536	ERJ6GMYG563	M. RESISTOR CH 1/10W 56K	1	
R7702	ERJ6GMYG122	M. RESISTOR CH 1/10W 1.2K	1	
R7703	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R7706	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R7708	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R7710	ERJ6GMYG562	M. RESISTOR CH 1/10W 5.6K	1	
R7711	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R7712	ERJ6GMYG682	M. RESISTOR CH 1/10W 6.8K	1	
R7714	ERJ6GMYG223	M. RESISTOR CH 1/10W 22K	1	
R7716	ERJ6GMYG302	M. RESISTOR CH 1/10W 3K	1	
R7717	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
S1501	VESO709	SWITCH	1	
S7401	VSSO398	SWITCH	1	
S7503	EVQ11409K	SWITCH	1	
S7505-07	EVQ11G07K	SWITCH	3	
S7508	EVQ11409K	SWITCH	1	
T0703	EQV5ECO72A	TRANSFORMER	1	
T4001	EQQ7QF024Q	TRANSFORMER	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
VR7301	EVNCBAA00B23	V. RESISTOR	1	
W103	ERJ6GEY0R00	M. RESISTOR CH 1/10W 0	1	
W105	ERJ6GEY0R00	M. RESISTOR CH 1/10W 0	1	
W106	ERJ3GEY0R00	M. RESISTOR CH 1/16W 0	1	
W107, 02	ERJ6GEY0R00	M. RESISTOR CH 1/10W 0	2	
W118	ERJ3GEY0R00	M. RESISTOR CH 1/16W 0	1	
W120, 02	ERJ6GEY0R00	M. RESISTOR CH 1/10W 0	2	
W122	ERJ3GEY0R00	M. RESISTOR CH 1/16W 0	1	
W125	ERJ3GEY0R00	M. RESISTOR CH 1/16W 0	1	
W127	ERJ6GEY0R00	M. RESISTOR CH 1/10W 0	1	
W502-05	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	4	
W507-10	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	4	
W512-19	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	8	
X0702	EFCS4R5MS5W	FILTER	1	
X0703	EFCS3F03W3B	FILTER	1	
X0704	VLF1159	FILTER	1	
X3001	VSX0803	CRYSTAL OSCILLATOR	1	
X6001	VSX0583	CRYSTAL OSCILLATOR	1	
X7501	VSX0673	CRYSTAL OSCILLATOR	1	
X7502	VSX0666	CRYSTAL OSCILLATOR	1	
ZB1501, 02	VMD2329	HOLDER	2	
ZB1503	VMD2330	LED HOLDER	1	
ZB1504	VMD2328	REEL GUIDE	1	
ZB7001	VXQ0424	FIP HOLDER UNIT	1	
		MISCELLANEOUS		
	ENG46117G	TUNER	1	
	VMP4471	LIF ANGLE	1	
■	VEP07942B	P. C. BOARD W/COMPONENT	1	(RTL)
		OPERATION		
C7901, 02	ECKF1H103ZF	C. CAPACITOR 50V 0. 01U	2	
C7904-07	ECKF1H103ZF	C. CAPACITOR 50V 0. 01U	4	
D7901	1SS254	DIODE	1	
P7901	VJS3630B014B	CONNECTOR (FEMALE) 14P	1	
QR7901	UN6112	TRANSISTOR-RESISTOR	1	
R7901-03	ERDS2TJ122	C. RESISTOR 1/4W 1. 2K	3	
R7904	ERDS2TJ333	C. RESISTOR 1/4W 33K	1	
S7901	EVQ21405R	SWITCH	1	
S7903	EVQ21405R	SWITCH	1	
S7906	EVQ21405R	SWITCH	1	
S7908	EVQ21405R	SWITCH	1	
S7913	VSQ0817	SWITCH	1	
■	VEX0129	P. C. BOARD W/COMPONENT	1	(RTL)
		CYLINDER DRIVE		
C2901-03	ECEA1VSN2R2	E. CAPACITOR 35V 2. 2U	7	
C2904-06	ECUM1E104KBN	C. CAPACITOR CH 25V 0. 1U	7	
C2907	ECUM1E683KBN	C. CAPACITOR CH 25V 0. 068U	1	
C2908	ECUM1E473KBN	C. CAPACITOR CH 25V 0. 047U	1	
C2910	ECEA1CKS100	E. CAPACITOR 16V 10U	1	
IC2901	AN3814K	IC	1	
P2902	VJP1232T	CONNECTOR (MALE) 5P	1	
P2901	VJP2603W	CONNECTOR (MALE) 12P	1	
R2901	ERX12SJR68	M. RESISTOR CH 1/2W 0. 68	1	
		MISCELLANEOUS		
	VMA9138	MAIN HOLDER	1	

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